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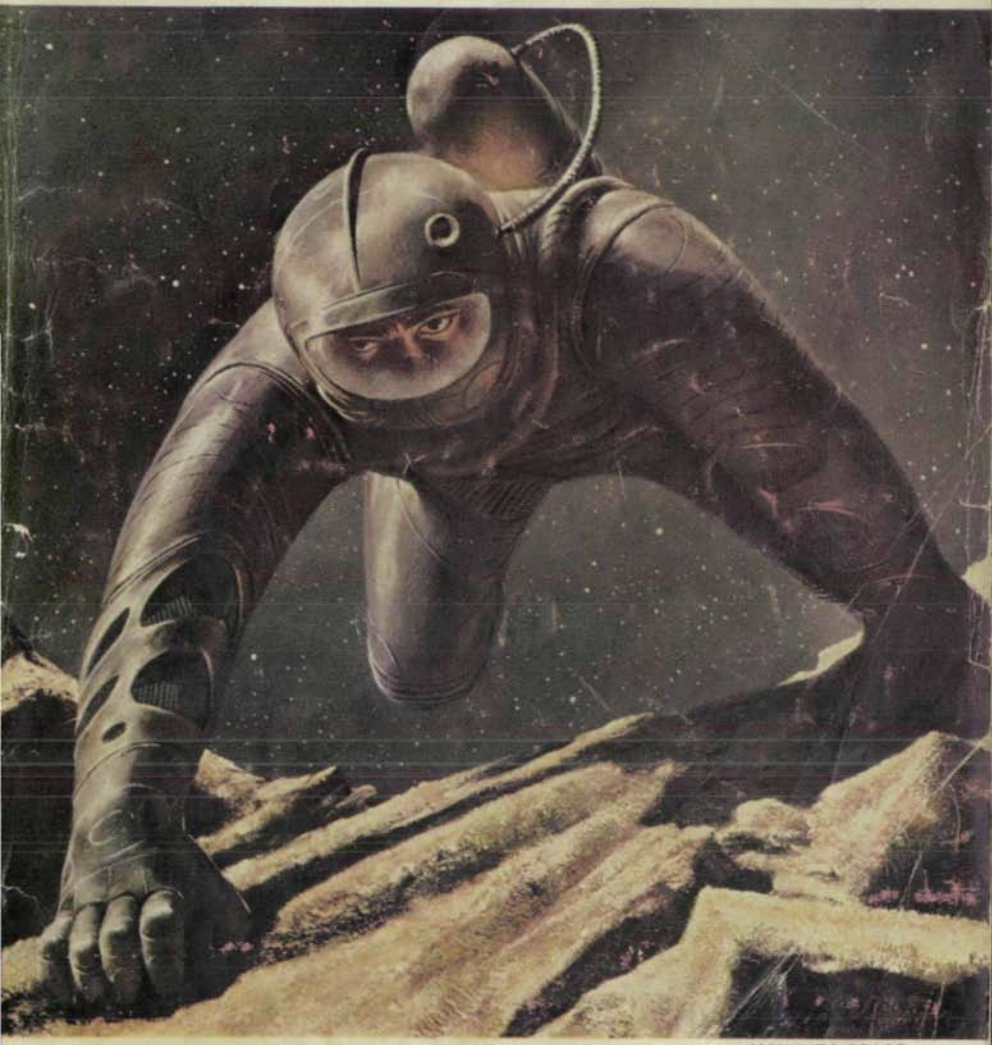

MAN INTO SPACE

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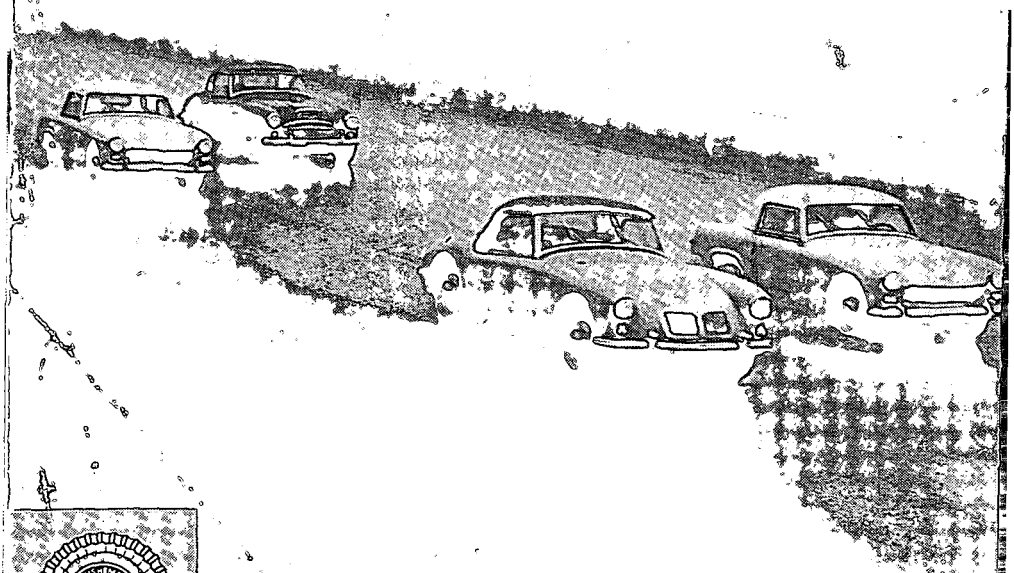

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"Three Degrees of Freedom . . ."

■ The concept of "degrees of freedom" as used in thermodynamics does not imply quantitative measure of freedom, as in "degrees of angle" or "degrees Farenheit", but the number of *different* kinds of freedom available to units of the system under discussion. A particle may have freedom to vibrate, but not to move, as an atom locked in a crystal latice. A gas molecule may be free to move linearly, to vibrate internally, and to spin around several axes. The total energy of the system will be distributed among the various available degrees of freedom.

When we speak, today of "a free society" or "the free world"—perhaps it would be advantageous to consider the "degrees of freedom" concept the thermodynamacist uses. In essence, the famous "Four Freedoms" were stated to call attention to the fact that freedom is not *one* thing, like the right to vote, or the right to worship as you choose. There are many degrees of freedom in a society; their interrelationships are extremely complex, and have more cross-compounded degrees of coupling than any thermodynamicist ever tried working out for the heat equation of interacting matter!

Let's consider the four primary classifications of forces in a culture; Political, Social, Religious and Economic. A given culture may be absolutely rigid, with zero freedom on one of those factors, while quite liberal on the others; it can, then, point to one of the liberal factors, and say pridefully, "We are a free society!" While you can point to the rigid factor, and properly say that it's a decidedly not-free culture. Who's right, then . . . ?

To understand clearly the extreme degree of variation possible, let's consider the culture of Alphastan. Alphastan has an absolute anarchial political system; there is *no* ruler, there are *no* laws, and *no* courts.

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There are no criminals, because there is nothing illegal, and it's impossible to commit a crime.

Yet the people of Alphastan are sober, well-disciplined, scrupulously honest—a well-ordered culture indeed. There are no judges, no police—and yet the citizenry is extremely orderly.

Of course, the Alphastanese do have some interesting social traditions. For instance, any man guilty of kissing his wife in public, is immediately stoned to death by those around. The wife is not stoned; she must, of course, do what her husband commands, so she's not guilty. However, naturally she's burned alive on her husband's subsequent funeral pyre, as prescribed by the common traditions of Society.

Now this, you understand, is a completely free culture; there are no laws, no police, no courts, no jails, and no criminals. A pure anarchy of absolute political freedom.

It happens that Alphastan does have some rather rigid and very powerful social customs, but *that* has nothing to do with *political* freedom!

Then we can consider the peculiar situation in Palestine, at about the years 30-50 A.D. The Jews, at that time, had no political power; they'd been conquered and were being ruled by Rome. They did have considerable political freedom, none the less, because the Roman laws, at that period, were reasonably sound and wise—and were pretty honestly administered. One of those laws had to do with granting religious freedom to conquered peoples—which worked quite well in most situations. The Jewish state, however, happened to be a theocracy; it had a religious system allowing almost zero freedom. So, although the Jewish High Priest had no *political* power, under Roman Law, Pontius Pilate was leg-

« *Continued on page 173* »

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MERCENARY

Every status-quo-caste society in history has left open two roads to rise above your caste: The Priest and The Warrior. But in a society of TV and tranquilizers — the Warrior acquires a strange new meaning...

BY MACK REYNOLDS

Joseph Mauser spotted the recruiting line-up from two or three blocks down the street, shortly after driving into Kingston. The local offices of Vacuum Tube Transport, undoubtedly. Baron Haer would be doing his recruiting for the fracas with Continental Hovercraft there if for no other reason than to save on rents. The Baron was watching pennies on this one and that was bad.

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In fact, it was so bad that even as Joe Mauser let his sport hovercar sink to a parking level and vaulted over its side he was still questioning his decision to sign up with the Vacuum Tube outfit rather than with their opponents. Joe was an old pro and old pros do not get to be old pros in the Category Military without developing an instinct to stay away from losing sides.

Fine enough for Low-Lowers and Mid-Lowers to sign up with this outfit, as opposed to that, motivated by no other reasoning than the snappiness of the uniform and the stock shares offered, but an old pro considered carefully such matters as budget. Baron Haer was watching every expense, was, it was rumored, figuring on commanding himself and calling upon relatives and friends for his staff. Continental Hovercraft, on the other hand, was heavy with variable capital and was in a position to hire Stonewall Cogswell himself for their tactician.

However, the die was cast. You didn't run up a caste level, not to speak of two at once, by playing it careful. Joe had planned this out; for once, old pro or not, he was taking risks.

Recruiting line-ups were not for such as he. Not for many a year, many a fracas. He strode rapidly along this one, heading for the offices ahead, noting only in passing the quality of the men who were taking service with Vacuum Tube Transport. These were the soldiers he'd be commanding in the immediate future and the prospects looked grim. There were few veterans among them. Their stance, their demeanor, their . . . well, you could tell a veteran even though he be Rank Private. You could tell a veteran of even one fracas. It showed.

He knew the situation. The word had gone out. Baron Malcolm Haer was due for a defeat. You weren't going to pick up any lush bonuses signing up with him, and you definitely weren't going to jump a caste. In short, no matter what Haer's past record, choose what was going to be the winning side—Continental Hovercraft. Continental Hovercraft and old Stonewall Cogswell who had lost so few fracases that many a Telly buff couldn't remember a single one.

Individuals among these men showed promise, Joe Mauser estimated even as he walked, but promise means little if you don't live long enough to cash in on it.

Take that small man up ahead. He'd obviously got himself into a hassel maintaining his place in line against two or three heftier would-be soldiers. The little fellow wasn't backing down a step in spite of the attempts of the other Lowers to usurp his place. Joe Mauser liked to see such spirit. You could use it when you were in the dill.

As he drew abreast of the altercation, he snapped from the side of his mouth, "Easy, lads. You'll get all the scrapping you want with Hovercraft. Wait until then."

He'd expected his tone of authority to be enough, even though he was

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in mufti. He wasn't particularly interested in the situation, beyond giving the little man a hand. A veteran would have recognized him as an old timer and probable officer, and heeded, automatically.

These evidently weren't veterans.

"Says who?" one of the Lowers growled back at him. "You one of Baron Haer's kids, or something?"

Joe Mauser came to a halt and faced the other. He was irritated, largely with himself. He didn't want to be bothered. Nevertheless, there was no alternative now.

The line of men, all Lowers so far as Joe could see, had fallen silent in an expectant hush. They were bored with their long wait. Now something would break the monotony.

By tomorrow, Joe Mauser would be in command of some of these men. In as little as a week he would go into a full fledged fracas with them. He couldn't afford to lose face. Not even at this point when all, including himself, were still civilian garbed. When matters pickled, in a fracas, you wanted men with complete confidence in you.

The man who had grumbled the surly response was a near physical twin of Joe Mauser which put him in his early thirties, gave him five foot eleven of altitude and about one hundred and eighty pounds. His clothes casted him Low-Lower—nothing to lose. As with many who have nothing to lose, he was willing to risk all for principle. His face now registered that ideal. Joe Mauser had no authority over him, nor his friends.

Joe's eyes flicked to the other two who had been pestering the little fellow. They weren't quite so aggressive and as yet had come to no conclusion about their stand. Probably the three had been unacquainted before their bullying alliance to deprive the smaller man of his place. However, a moment of hesitation and Joe would have a trio on his hands.

He went through no further verbal preliminaries. Joe Mauser stepped closer. His right hand lanced forward, not doubled in a fist but fingers close together and pointed, spear-like. He sank it into the other's abdomen, immediately below the rib cage —the solar plexus.

He had misestimated the other two. Even as his opponent crumpled, they were upon him, coming in from each side. And at least one of them, he could see now, had been in hand-to-hand combat before. In short, another pro, like Joe himself.

He took one blow, rolling with it, and his feet automatically went into the shuffle of the trained fighter. He retreated slightly to erect defenses, plan attack. They pressed him strongly, sensing victory in his retreat.

The one mattered little to him. Joe Mauser could have polished off the oaf in a matter of seconds, had he been allotted seconds to devote. But the second, the experienced one, was the problem. He and Joe were well matched and with the oaf as an

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ally really he had all the best of it.

Support came from a forgotten source, the little chap who had been the reason for the whole hassel. He waded in now as big as the next man so far as spirit was concerned, but a sorry fate gave him to attack the wrong man, the veteran rather than the tyro. He took a crashing blow to the side of his head which sent him sailing back into the recruiting line, now composed of excited, shouting verbal participants of the fray.

However, the extinction of Joe Mauser's small ally had taken a moment or two and time was what Joe needed most. For a double second he had the oaf alone on his hands and that was sufficient. He caught a flailing arm, turned his back and automatically went into the movements which result in that spectacular hold of the wrestler, the Flying Mare. Just in time he recalled that his opponent was a future comrade-in-arms and twisted the arm so that it bent at the elbow, rather than breaking. He hurled the other over his shoulder and as far as possible, to take the scrap out of him, and twirled quickly to meet the further attack of his sole remaining foe.

That phase of the combat failed to materialize.

A voice of command bit out, "Hold it, you lads!"

The original situation which had precipitated the fight was being duplicated. But while the three Lowers had failed to respond to Joe Mauser's tone of authority, there was no similar failure now.

The owner of the voice, beautifully done up in the uniform of Vacuum Tube Transport, complete to kilts and the swagger stick of the officer of Rank Colonel or above, stood glaring at them. Age, Joe estimated, even as he came to attention, somewhere in the late twenties—an Upper in caste. Born to command. His face holding that arrogant, contemptuous expression once common to the patricians of Rome, the Prussian Junkers, the British ruling class of the Nineteenth Century. Joe knew the expression well. How well he knew it. On more than one occasion, he had dreamt of it.

Joe said, "Yes, sir."

"What in Zen goes on here? Are you lads overtranked?"

"No, sir," Joe's veteran opponent grumbled, his eyes on the ground, a schoolboy before the principal.

Joe said, evenly, "A private disagreement, sir."

"Disagreement!" the Upper snorted. His eyes went to the three fallen combatants, who were in various stages of reviving. "I'd hate to see you lads in a real scrap."

That brought a response from the non-combatants in the recruiting line. The *bon mot* wasn't that good but caste has its privileges and the laughter was just short of uproarious.

Which seemed to placate the kilted officer. He tapped his swagger stick against the side of his leg while he ran his eyes up and down Joe Mauser and the others, as though memorizing them for future reference.

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"All right," he said. "Get back into the line, and you trouble makers quiet down. We're processing as quickly as we can." And at that point he added insult to injury with an almost word for word repetition of what Joe had said a few moments earlier. "You'll get all the fighting you want from Hovercraft, if you can wait until then."

The four original participants of the rumpus resumed their places in various stages of sheepishness. The little fellow, nursing an obviously aching jaw, made a point of taking up his original position even while darting a look of thanks to Joe Mauser who still stood where he had when the fight was interrupted.

The Upper looked at Joe. "Well, lad, are you interested in signing up with Vacuum Tube Transport or not?"

"Yes, sir," Joe said evenly. Then, "Joseph Mauser, sir. Category Military, Rank Captain."

"Indeed." The officer looked him up and down all over again, his nostrils high. "A Middle, I assume. And brawling with recruits." He held a long silence. "Very well, come with me." He turned and marched off.

Joe inwardly shrugged. This was a fine start for his pitch—a fine start. He had half a mind to give it all up, here and now, and head on up to Catskill to enlist with Continental Hovercraft. His big scheme would wait for another day. Nevertheless, he fell in behind the aristocrat and followed him to the offices which had been his original destination.

Two Rank Privates with 45-70 Springfields and wearing the Haer kilts in such wise as to indicate permanent status in Vacuum Tube Transport came to the salute as they approached. The Upper preceding Joe Mauser flicked his swagger stick in an easy nonchalance. Joe felt envious amusement. How long did it take to learn how to answer a salute with that degree of arrogant ease?

There were desks in here, and typers humming, as Vacuum Tube Transport office workers, mobilized for this special service, processed volunteers for the company forces. Harried noncoms and junior-grade officers buzzed everywhere, failing miserably to bring order to the chaos. To the right was a door with a medical cross newly painted on it. When it occasionally popped open to admit or emit a recruit, white-robed doctors, male nurses and half nude men could be glimpsed beyond.

Joe followed the other through the press and to an inner office at which door he didn't bother to knock. He pushed his way through, waved in greeting with his swagger stick to the single occupant who looked up from the paper- and tape-strewn desk at which he sat.

Joe Mauser had seen the face before on Telly though never so tired as this and never with the element of defeat to be read in the expression. Bullet-headed, barrel-figured Baron Malcolm Haer of Vacuum Tube Transport. Category Transportation, Mid-Upper, and strong candidate for

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Upper-Upper upon retirement. However, there would be few who expected retirement in the immediate future. Hardly. Malcolm Haer found too obvious a lusty enjoyment in the competition between Vacuum Tube Transport and its stronger rivals.

Joe came to attention, bore the sharp scrutiny of his chosen commander-to-be. The older man's eyes went to the kilted Upper officer who had brought Joe along. "What is it, Balt?"

The other gestured with his stick at Joe. "Claims to be Rank Captain. Looking for a commission with us, Dad. I wouldn't know why." The last sentence was added lazily.

The older Haer shot an irritated glance at his son. "Possibly for the same reason mercenaries usually enlist for a fracas, Balt." His eyes came back to Joe.

Joe Mauser, still at attention even though in mufti, opened his mouth to give his name, category and rank, but the older man waved a hand negatively. "Captain Mauser, isn't it? I caught the fracas between Carbonaceous Fuel and United Miners, down on the Panhandle Reservation. Seems to me I've spotted you once or twice before, too."

"Yes, sir," Joe said. This was some improvement in the way things were going.

The older Haer was scowling at him. "Confound it, what are you doing with no more rank than captain? On the face of it, you're an old hand, a highly experienced veteran."

An old pro, we call ourselves, Joe said to himself. *Old pros, we call ourselves, among ourselves.*

Aloud, he said, "I was born a Mid-Lower, sir."

There was understanding in the old man's face, but Balt Haer said loftily, "What's that got to do with it? Promotion is quick and based on merit in Category Military."

At a certain point, if you are good combat officer material, you speak your mind no matter the rank of the man you are addressing. On this occasion, Joe Mauser needed few words. He let his eyes go up and down Balt Haer's immaculate uniform, taking in the swagger stick of the Rank Colonel or above. Joe said evenly, "Yes, sir."

Balt Haer flushed quick temper. "What do you mean by—"

But his father was chuckling. "You have spirit, captain. I need spirit now. You are quite correct. My son, though a capable officer, I assure you, has probably not participated in a fraction of the fracases you have to your credit. However, there is something to be said for the training available to we Uppers in the academies. For instance, captain, have you ever commanded a body of lads larger than, well, a *company?*"

Joe said flatly, "In the Douglas-Boeing versus Lockheed-Cessna fracas we took a high loss of officers when the Douglas-Boeing outfit rang in some fast-firing French *mitrailleuse* we didn't know they had. As my superiors took casualties I was field promoted to acting battalion

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commander, to acting regimental commander, to acting brigadier. For three days I held the rank of acting commander of brigade. We won."

Balt Haer snapped his fingers. "I remember that. Read quite a paper on it." He eyed Joe Mauser, almost respectfully. "Stonewall Cogswell got the credit for the victory and received his marshal's baton as a result."

"He was one of the few other officers that survived," Joe said dryly.

"But, Zen! You mean you got no promotion at all?"

Joe said, "I was upped to Low-Middle from High-Lower, sir. At my age, at the time, quite a promotion."

Baron Haer was remembering, too. "That was the fracas that brought on the howl from the Sovs. They claimed those *mitrailleuse* were post-1900 and violated the Universal Disarmament Pact. Yes, I recall that. Douglas-Boeing was able to prove that the weapon was used by the French as far back as the Franco-Prussian War." He eyed Joe with new interest now. "Sit down, captain. You too, Balt. Do you realize that Captain Mauser is the only recruit of officer rank we've had today?"

"Yes," the younger Haer said dryly. "However, it's too late to call the fracas off now. Hovercraft wouldn't stand for it, and the Category Military Department would back them. Our only alternative is unconditional surrender, and you know what that means."

"It means our family would probably be forced from control of the firm," the older man growled. "But nobody has suggested surrender on any terms. Nobody, thus far." He glared at his officer son who took it with an easy shrug and swung a leg over the edge of his father's desk in the way of a seat.

Joe Mauser found a chair and lowered himself into it. Evidently, the foppish Balt Haer had no illusions about the spot his father had got the family corporation into. And the younger man was right, of course.

But the Baron wasn't blind to reality any more than he was a coward. He dismissed Balt Haer's defeatism from his mind and came back to Joe Mauser. "As I say, you're the only officer recruit today. Why?"

Joe said evenly, "I wouldn't know, sir. Perhaps free lance Category Military men are occupied elsewhere. There's always a shortage of trained officers."

Baron Haer was waggling a finger negatively. "That's not what I mean, captain. You are an old hand. This is your category and you must know it well. Then why are *you* signing up with Vacuum Tube Transport rather than Hovercraft?"

Joe Mauser looked at him for a moment without speaking.

"Come, come, captain. I am an old hand too, in my category, and not a fool. I realize there is scarcely a soul in the West-world that expects anything but disaster for my colors. Pay rates have been widely posted. I can offer only five common shares of

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Vacuum Tube for a Rank Captain, win or lose. Hovercraft is doubling that, and can pick and choose among the best officers in the hemisphere."

Joe said softly, "I have all the shares I need."

Balt Haer had been looking back and forth between his father and the newcomer and becoming obviously more puzzled. He put in, "Well, what in Zen motivates you if it isn't the stock we offer?"

Joe glanced at the younger Haer to acknowledge the question but he spoke to the Baron. "Sir, like you said, you're no fool. However, you've been sucked in, this time. When you took on Hovercraft, you were thinking in terms of a regional dispute. You wanted to run one of your vacuum tube deals up to Fairbanks from Edmonton. You were expecting a minor fracas, involving possibly five thousand men. You never expected Hovercraft to parlay it up, through their connections in the Category Military Department, to a divisional magnitude fracas which you simply aren't large enough to afford. But Hovercraft was getting sick of your corporation. You've been nicking away at them too long. So they decided to do you in. They've hired Marshal Cogswell and the best combat officers in North America, and they're hiring the most competent veterans they can find. Every fracas buff who watches Telly, figures you've had it. They've been watching you come up the aggressive way, the hard way, for a long time, but now they're all going to be sitting on the edges of their sofas waiting for you to get it."

Baron Haer's heavy face had hardened as Joe Mauser went on relentlessly. He growled, "Is this what everyone thinks?"

"Yes. Everyone intelligent enough to have an opinion." Joe made a motion of his head to the outer offices where the recruiting was proceeding. "Those men out there are rejects from Catskill, where old Baron Zwerdling is recruiting. Either that or they're inexperienced Low-Lowers, too stupid to realize they're sticking their necks out. Not one man in ten is a veteran. And when things begin to pickle, you want veterans."

Baron Malcolm Haer sat back in his chair and stared coldly at Captain Joe Mauser. He said, "At first I was moderately surprised that an old time mercenary like yourself should chose my uniform, rather than Zwerdling's. Now I am increasingly mystified about motivation. So all over again I ask you, captain: Why are you requesting a commission in my forces which you seem convinced will meet disaster?"

Joe wet his lips carefully. "I think I know a way you can win."

II

His permanent military rank the Haers had no way to alter, but they were short enough of competent officers that they gave him an acting rating and pay scale of major and command of a squadron of cavalry.

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Joe Mauser wasn't interested in a cavalry command this fracas, but he said nothing. Immediately, he had to size up the situation; it wasn't time as yet to reveal the big scheme. And, meanwhile, they could use him to whip the Rank Privates into shape.

He had left the offices of Baron Haer to go through the red tape involved in being signed up on a temporary basis in the Vacuum Tube Transport forces and reentered the confusion of the outer offices where the Lowers were being processed and given medicals. He reentered in time to run into a Telly team which was doing a live broadcast.

Joe Mauser remembered the news reporter who headed the team. He'd run into him two or three times in fracases. As a matter of fact, although Joe held the standard Military Category prejudices against Telly, he had a basic respect for this particular newsman. On the occasions he'd seen him before, the fellow was hot in the midst of the action even when things were in the dill. He took as many chances as did the average combatant, and you can't ask for more than that.

The other knew him, too, of course. It was part of his job to be able to spot the celebrities and near celebrities. He zeroed in on Joe now, making flicks of his hand to direct the cameras. Joe, of course, was fully aware of the value of Telly and was glad to co-operate.

"Captain! Captain Mauser, isn't it? Joe Mauser who held out for four days in the swamps of Louisiana with a single company while his ranking officers reformed behind him."

That was one way of putting it, but both Joe and the newscaster who had covered the debacle knew the reality of the situation. When the front had collapsed, his commanders—of Upper caste, of course—had hauled out, leaving him to fight a delaying action while they mended their fences with the enemy, coming to the best terms possible. Yes, that had been the United Oil versus Allied Petroleum fracas, and Joe had emerged with little either in glory or pelf.

The average fracas fan wasn't on an intellectual level to appreciate anything other than victory. The good guys win, the bad guys lose—that's obvious, isn't it? Not one out of ten Telly followers of the fracases was interested in a well conducted retreat or holding action. They wanted blood, lots of it, and they identified with the winning side.

Joe Mauser wasn't particularly bitter about this aspect. It was part of his way of life. In fact, his pet peeve was the *real* buff. The type, man or woman, who could remember every fracas you'd ever been in, every time you'd copped one, and how long you'd been in the hospital. Fans who could remember, even better than you could, every time the situation had pickled on you and you'd had to fight your way out as best you could. They'd tell you about it, their eyes gleaming, sometimes a slightest trickle of spittle at the sides of their mouths. They usually wanted an au-

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tograph, or a souvenir such as a uniform button.

Now Joe said to the Telly reporter, "That's right, Captain Mauser. Acting major, in this fracas, ah—"

"Freddy. Freddy Soligen. You remember me, captain—"

"Of course I do, Freddy. We've been in the dill, side by side, more than once, and even when I was too scared to use my side arm, you'd be scanning away with your camera."

"Ha ha, listen to the captain, folks. I hope my boss is tuned in. But seriously, Captain Mauser, what do you think the chances of Vacuum Tube Transport are in this fracas?"

Joe looked into the camera lens, earnestly. "The best, of course, or I wouldn't have signed up with Baron Haer, Freddy. Justice triumphs, and anybody who is familiar with the issues in this fracas, knows that Baron Haer is on the side of true right."

Freddy said, holding any sarcasm he must have felt, "What would you say the issues were, captain?"

"The basic North American free enterprise right to compete. Hovercraft has held a near monopoly in transport to Fairbanks. Vacuum Tube Transport wishes to lower costs and bring the consumers of Fairbanks better service through running a vacuum tube to that area. What could be more in the traditions of the Westworld? Continental Hovercraft stands in the way and it is they who have demanded of the Category Military Department a trial by arms. On the face of it, justice is on the side of Baron Haer."

Freddy Soligen said into the camera, "Well, all you good people of the Telly world, that's an able summation the captain has made, but it certainly doesn't jibe with the words of Baron Zwerdling we heard this morning, does it? However, justice triumphs and we'll see what the field of combat will have to offer. Thank you, thank you very much, Captain Mauser. All of us, all of us tuned in today, hope that you personally will run into no dill in this fracas."

"Thanks, Freddy. Thanks all," Joe said into the camera, before turning away. He wasn't particularly keen about this part of the job, but you couldn't underrate the importance of pleasing the buffs. In the long run it was your career, your chances for promotion both in military rank and ultimately in caste. It was the way the fans took you up, boosted you, idolized you, worshipped you if you really made it. He, Joe Mauser, was only a minor celebrity, he appreciated every chance he had to be interviewed by such a popular reporter as Freddy Soligen.

Even as he turned, he spotted the four men with whom he'd had his spat earlier. The little fellow was still to the fore. Evidently, the others had decided the one place extra that he represented wasn't worth the trouble he'd put in their way defending it.

On an impulse he stepped up to the small man who began a grin of recognition, a grin that transformed his fiesty face. A revelation of an

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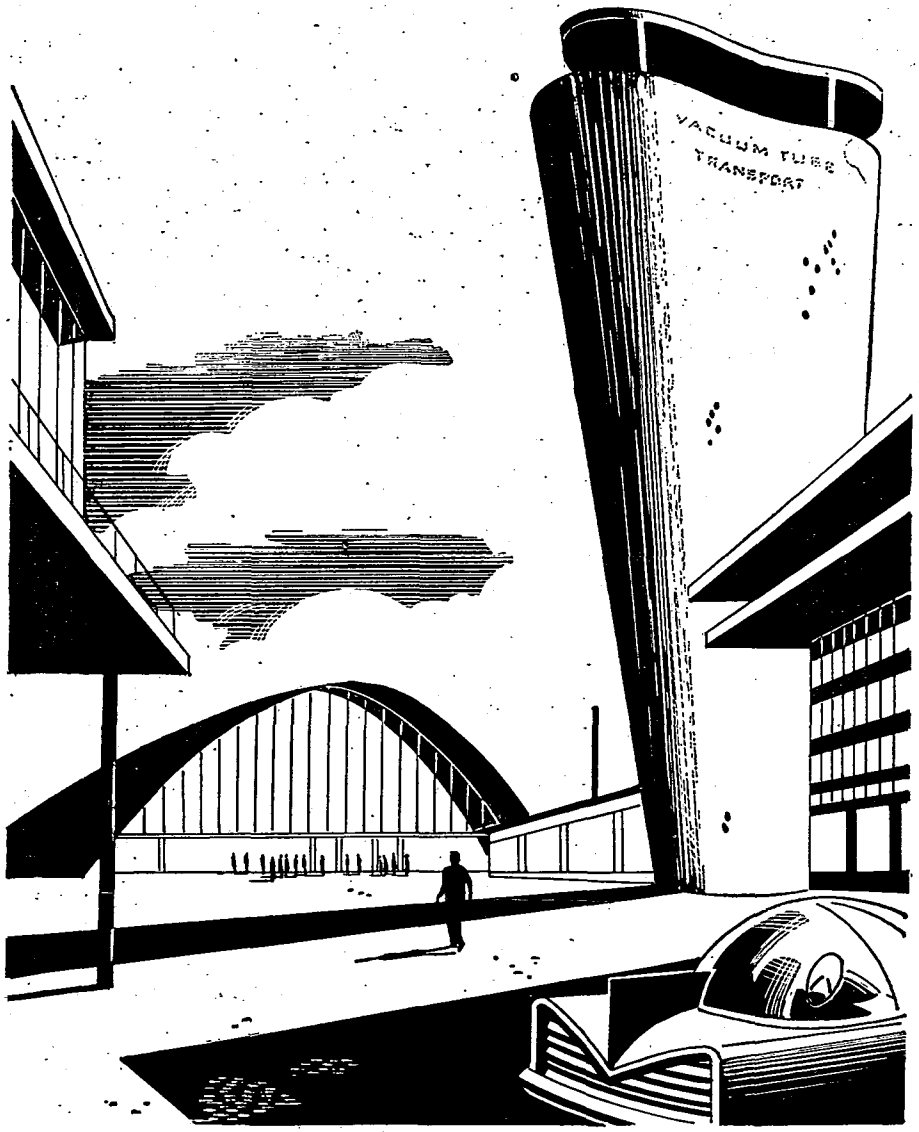

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inner warmth beyond average in a world which had lost much of its human warmth.

Joe said, "Like a job, soldier?"

"Name's Max. Max Mainz. Sure I want a job. That's why I'm in this everlasting line."

Joe said, "First fracas for you, isn't it?"

"Yeah, but I had basic training in school."

"What do you weigh, Max?"

Max's face soured. "About one twenty."

"Did you check out on semaphore in school?"

"Well, sure. I'm Category Food, Sub-division Cooking, Branch Chef, but, like I say, I took basic military training, like most everybody else."

"I'm Captain Joe Mauser. How'd you like to be my batman?"

Max screwed up his already not overly handsome face. "Gee, I don't know. I kinda joined up to see some action. Get into the dill. You know what I mean."

Joe said dryly, "See here, Mainz, you'll probably find more pickled situations next to me than you'll want—and you'll come out alive."

The recruiting sergeant looked up from the desk. It was Max Mainz's turn to be processed. The sergeant said, "Lad, take a good opportunity when it drops in your lap. The captain is one of the best in the field. You'll learn more, get better chances for promotion, if you stick with him."

Joe couldn't remember ever having run into the sergeant before, but he said, "Thanks, sergeant."

The other said, evidently realizing Joe didn't recognize him, "We were together on the Chihuahua Reservation, on the jurisdictional fracas between the United Miners and the Teamsters, sir."

It had been almost fifteen years ago. About all that Joe Mauser remembered of that fracas was the abnormal number of casualties they'd taken. His side had lost, but from this distance in time Joe couldn't even remember what force he'd been with. But now he said, "That's right. I thought I recognized you, sergeant."

"It was my first fracas, sir." The sergeant went businesslike. "If you want I should hustle this lad though, captain—"

"Please do, sergeant." Joe added to Max, "I'm not sure where my billet will be. When you're through all this, locate the officer's mess and wait there for me."

"Well, O.K.," Max said doubtfully, still scowling but evidently a servant of an officer, if he wanted to be or not.

"Sir," the sergeant added ominously. "If you've had basic, you know enough how to address an officer."

"Well, yes sir," Max said hurriedly.

Joe began to turn away, but then spotted the man immediately behind Max Mainz. He was one of the three with whom Joe had tangled earlier, the one who'd obviously had previous combat experience. He pointed the man out to the sergeant. "You'd better give this lad at least temporary rank of corporal. He's a veteran and we're short of veterans."

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The sergeant said, "Yes, sir. We sure are." Joe's former foe looked properly thankful.

Joe Mauser finished off his own red tape and headed for the street to locate a military tailor who could do him up a set of the Haer kilts and fill his other dress requirements. As he went, he wondered vaguely just how many different uniforms he had worn in his time.

In a career as long as his own from time to time you took semi-permanent positions in bodyguards, company police, or possibly the permanent combat troops of this corporation or that. But largely, if you were ambitious, you signed up for the fracases and that meant into a uniform and out of it again in as short a period as a couple of weeks.

At the door he tried to move aside but was too slow for the quick moving young woman who caromed off him. He caught her arm to prevent her from stumbling. She looked at him with less than thanks.

Joe took the blame for the collision. "Sorry," he said. "I'm afraid I didn't see you, Miss."

"Obviously," she said coldly. Her eyes went up and down him, and for a moment he wondered where he had seen her before. Somewhere, he was sure.

She was dressed as they dress who have never considered cost and she had an elusive beauty which would have been even the more hadn't her face projected quite such a serious outlook. Her features were more delicate than those to which he was usually attracted. Her lips were less full, but still— He was reminded of the classic ideal of the British Romantic Period, the women sung of by Byron and Keats, Shelly and Moore.

She said, "Is there any particular reason why you should be staring at me, Mr.—"

"Captain Mauser," Joe said hurriedly. "I'm afraid I've been rude, Miss—Well, I thought I recognized you."

She took in his civilian dress, typed it automatically, and came to an erroneous conclusion. She said, "Captain? You mean that with everyone else I know drawing down ranks from Lieutenant Colonel to Brigadier General, you can't make anything better than Captain?"

Joe winced. He said carefully, "I came up from the ranks, Miss. Captain is quite an achievement, believe me."

"Up from the ranks!" She took in his clothes again. "You mean you're a Middle? You neither talk nor look like a Middle, captain." She used the caste rating as though it was not *quite* a derogatory term.

Not that she meant to be deliberately insulting, Joe knew, wearily. How well he knew. It was simply born in her. As once a well-educated aristocracy had, not necessarily unkindly, named their status inferiors *niggers*; or other aristocrats, in another area of the country, had named theirs *greasers*. Yes, how well he knew.

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He said very evenly, "Mid-Middle now, Miss. However, I was born in the Lower castes."

An eyebrow went up. "Zen! You must have put in many an hour studying. You talk like an Upper, captain." She dropped all interest in him and turned to resume her journey.

"Just a moment," Joe said. "You can't go in there, Miss—"

Her eyebrows went up again. "The name is Haer," she said. "Why can't I go in here, capatin?"

Now it came to him why he had thought he recognized her. She had basic features similar to those of that overbred poppycock, Balt Haer.

"Sorry," Joe said. "I suppose under the circumstances, you can. I was about to tell you that they're recruiting with lads running around half clothed. Medical inspections, that sort of thing."

She made a noise through her nose and said over her shoulder, even as she sailed on. "Besides being a Haer, I'm an M.D., captain. At the ludicrous sight of a man shuffling about in his shorts, I seldom blush."

She was gone.

Joe Mauser looked after her. "I'll bet you don't," he muttered.

Had she waited a few minutes he could have explained his Upper accent and his unlikely education. When you'd copped one you had plenty of opportunity in hospital beds to read, to study, to contemplate—and to fester away in your own schemes of rebellion against fate. And Joe had copped many in his time.

III

By the time Joe Mauser called it a day and retired to his quarters he was exhausted to the point where his basic dissatisfaction with the trade he followed was heavily upon him.

He had met his immediate senior officers, largely dilettante Uppers with precious little field experience, and was unimpressed. And he'd met his own junior officers and was shocked. By the looks of things at this stage, Captain Mauser's squadron would be going into this fracas both undermanned with Rank Privates and with junior officers composed largely of temporarily promoted noncoms. If this was typical of Baron Haer's total force, then Balt Haer had been correct; unconditional surrender was to be considered, no matter how disasterous to Haer family fortunes.

Joe had been able to take immediate delivery of one kilted uniform. Now, inside his quarters, he began stripping out of his jacket. Somewhat to his surprise, the small man he had selected earlier in the day to be his batman entered from an inner room, also resplendent in the Haer uniform and obviously happily so.

He helped his superior out of the jacket with an ease that held no subservience but at the same time was correctly respectful. You'd have thought him a batman specially trained.

Joe grunted, "Max, isn't it? I'd forgotten about you. Glad you found our billet all right."

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Max said, "Yes, sir. Would the captain like a drink? I picked up a bottle of applejack. Applejack's the drink around here, sir. Makes a topnotch highball with gingerale and a twist of lemon."

Joe Mauser looked at him. Evidently his tapping this man for orderly had been sheer fortune. Well, Joe Mauser could use some good luck on this job. He hoped it didn't end with selecting a batman.

Joe said, "An applejack highball sounds wonderful, Max. Got ice?"

"Of course, sir." Max left the small room.

Joe Mauser and his officers were billeted in what had once been a motel on the old road between Kingston and Woodstock. There was a shower and a tiny kitchenette in each cottage. That was one advanatge in a fracas held in an area where there were plenty of facilities. Such military reservations as that of the Little Big Horn in Montana and particularly some of those in the South West and Mexico, were another thing.

Joe lowered himself into the room's easy-chair and bent down to untie his laces. He kicked his shoes off. He could use that drink. He began wondering all over again if his scheme for winning this Vacuum Tube Transport versus Continental Hovercraft fracas would come off. The more he saw of Baron Haer's inadequate forces, the more he wondered. He hadn't expected Vacuum Tube to be in *this* bad a shape. Baron Haer had been riding high for so long that one would have thought his reputation for victory would have lured many a veteran to his colors. Evidently they hadn't bitten. The word was out all right.

Max Mainz returned with the drink.

Joe said, "You had one yourself?"

"No, sir."

Joe said, "Well, Zen, go get yourself one and come on back and sit down. Let's get acquainted."

"Well, yessir." Max disappeared back into the kitchenette to return almost immediately. The little man slid into a chair, drink awkwardly in hand.

His superior sized him up, all over again. Not much more than a kid, really. Surprisingly aggressive for a Lower who must have been raised from childhood in a trank bemused, Telly entertained household. The fact that he'd broken away from that environment at all was to his credit, it was considerably easier to conform. But then it is always easier to conform, to run with the herd, as Joe well knew. His own break hadn't been an easy one. "Relax," he said now.

Max said, "Well, this is my first day."

"I know. And you've been seeing Telly shows all your life showing how an orderly conducts himself in the presence of his superior." Joe took another pull and yawned. "Well, forget about it. With any man who goes into a fracas with me, I like to be on close terms. When things pickle, I want him to be on

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my side, not nursing some peeve brought on by his officer trying to give him an inferiority complex."

The little man was eying him in surprise.

Joe finished his highball and came to his feet to get another one. He said, "On two occasions I've had an orderly save my life. I'm not taking any chances but that there might be a third opportunity."

"Well, yessir. Does the captain want me to get him—"

"I'll get it," Joe said.

When he'd returned to his chair, he said, "Why did you join up with Baron Haer, Max?"

The other shrugged it off. "The usual. The excitement. The idea of all those fans watching me on Telly. The share of common stock I'll get. And, you never know, maybe a promotion in caste. I wouldn't mind making Upper-Lower."

Joe said sourly, "One fracas and you'll be over that desire to have the buffs watching you on Telly while they sit around in their front rooms sucking on tranks. And you'll probably be over the desire for the excitement, too. Of course, the share of stock is another thing."

"You aren't just countin' down, captain," Max said, an almost surly overtone in his voice. "You don't know what it's like being born with no more common stock shares than a Mid-Lower."

Joe held his peace, sipping at his drink, taking this one more slowly. He let his eyebrows rise to encourage the other to go on.

Max said doggedly, "Sure, they call it People's Capitalism and everybody gets issued enough shares to insure him a basic living all the way from the cradle to the grave, like they say. But let me tell you, you're a Middle and you don't realize how basic the basic living of a Lower can be."

Joe yawned. If he hadn't been so tired, there would have been more amusement in the situation.

Max was still dogged. "Unless you can add to those shares of stock, it's pretty drab, captain. You wouldn't know."

Joe said, "Why don't you work? A Lower can always add to his stock by working."

Max stirred in indignity. "Work? Listen, sir, that's just one more field that's been automated right out of existence. Category Food Preparation, Sub-division Cooking, Branch Chef. Cooking isn't left in the hands of slobs who might drop a cake of soap into the soup. It's done automatic. The only new changes made in cooking are by real top experts, almost scientists like. And most of them are Uppers, mind you."

Joe Mauser sighed inwardly. So his find in batmen wasn't going to be as wonderful as all that, after all. The man might have been born into the food preparation category from a long line of chefs, but evidently he knew precious little about his field. Joe might have suspected. He himself had been born into Clothing Category, Sub-division Shoes, Branch Repair—Cobbler—a meaningless

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trade since shoes were no longer repaired but discarded upon showing signs of wear. In an economy of complete abundance, there is little reason for repair of basic commodities. It was high time the government investigated category assignment and reshuffled and reassigned half the nation's population. But then, of course, was the question of what to do with the technologically unemployed.

Max was saying, "The only way I could figure on a promotion to a higher caste, or the only way to earn stock shares, was by crossing categories. And you know what that means. Either Category Military, or Category Religion and I sure as Zen don't know nothing about religion."

Joe said mildly, "Theoretically, you can cross categories into any field you want, Max."

Max snorted. "Theoretically is right . . . sir. You ever heard about anybody born a Lower, or even a Middle like yourself, cross categories to, say, some Upper category like banking?"

Joe chuckled. He liked this peppery little fellow. If Max worked out as well as Joe thought he might, there was a possibility of taking him along to the next fracas.

Max was saying, "I'm not saying anything against the old time way of doing things or talking against the government, but I'll tell you, captain, every year goes by it gets harder and harder for a man to raise his caste or to earn some additional stock shares."

The applejack had worked enough on Joe for him to rise against one of his pet peeves. He said, "That term, the old time way, is strictly Telly talk, Max. We don't do things *the old time way.* No nation in history ever has—with the possible exception of Egypt. Socio-economics are in a continual flux and here in this country we no more do things in the way they did fifty years ago, than fifty years ago they did them the way the American Revolutionists outlined back in the Eighteenth Century."

Max was staring at him. "I don't get that, sir."

Joe said impatiently, "Max, the politico-economic system we have today is an outgrowth of what went earlier. The welfare state, the freezing of the status quo, the Frigid Fracas between the West-world and the Sov-world, industrial automation until useful employment is all but needless—all these things were to be found in embryo more than fifty years ago."

"Well, maybe the captain's right, but you gotta admit, sir, that mostly we do things the old way. We still got the Constitution and the two-party system and—"

Joe was wearying of the conversation now. You seldom ran into anyone, even in Middle caste, the traditionally professional class, interested enough in such subjects to be worth arguing with. He said, "The Constitution, Max, has got to the point of

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the Bible. Interpret it the way you wish, and you can find anything. If not, you can always make a new amendment. So far as the two-party system is concerned, what effect does it have when there are no differences between the two parties? That phase of pseudo-democracy was beginning as far back as the 1930s when they began passing State laws hindering the emerging of new political parties. By the time they were insured against a third party working its way through the maze of election laws, the two parties had become so similar that elections became almost as big a farce as over in the Sov-world."

"A farce?" Max ejaculated indignantly, forgetting his servant status. "That means not so good, doesn't it? Far as I'm concerned, election day is tops. The one day a Lower is just as good as an Upper. The one day how many shares you got makes no difference. Everybody has everything."

"Sure, sure, sure," Joe sighed. "The modern equivalent of the Roman Baccanalia. Election day in the West-world when no one, for just that one day, is freer than anyone else."

"Well, what's wrong with that?" The other was all but belligerent. "That's the trouble with you Middles and Uppers, you don't know how it is to be a Lower and—"

Joe snapped suddenly, "I was born a Mid-Lower myself, Max. Don't give me that nonsense."

Max gaped at him, utterly unbelieving.

Joe's irritation fell away. He held out his glass. "Get us a couple of more drinks, Max, and I'll tell you a story."

By the time the fresh drink came, Joe Mauser was sorry he'd made the offer. He thought back. He hadn't told anyone the Joe Mauser story in many a year. And, as he recalled, the last time had been when he was well into his cups, on an election day at that, and his listener had been a Low-Upper, a hereditary aristocrat, one of the one per cent of the upper strata of the nation. Zen! How the man had laughed. He'd roared his amusement till the tears ran.

However, Joe said, "Max, I was born in the same caste you were—average father, mother, sisters and brothers. They subsisted on the basic income guaranteed from birth, sat and watched Telly for an unbelievable number of hours each day, took trank to keep themselves happy. And thought I was crazy because I didn't. Dad was the sort of man who'd take his belt off to a child of his who questioned such school taught slogans as *What was good enough for Daddy is good enough for me.*

"They were all fracas fans, of course. As far back as I can remember the picture is there of them gathered around the Telly, screaming excitement." Joe Mauser sneered, uncharacteristically.

"You don't sound much like you're in favor of your trade, captain," Max said.

Joe came to his feet, putting down his still half-full glass. "I'll make this

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epic story short, Max. As you said, the two actually valid methods of rising above the level in which you were born are in the Military and Religious Categories. Like you, even I couldn't stomach the latter."

Joe Mauser hesitated, then finished it off. "Max, there have been few societies that man has evolved that didn't allow in some manner for the competent or sly, the intelligent or the opportunist, the brave or the strong, to work his way to the top. I don't know which of these I personally fit into, but I rebel against remaining in the lower categories of a stratified society. Do I make myself clear?"

"Well, no sir, not exactly."

Joe said flatly, "I'm going to fight my way to the top, and nothing is going to stand in the way. Is that clearer?"

"Yessir," Max said, taken aback.

IV

After routine morning duties, Joe Mauser returned to his billet and mystified Max Mainz by not only changing into mufti himself but having Max do the same.

In fact, the new batman protested faintly. He hadn't nearly, as yet, got over the glory of wearing his kilts and was looking forward to parading around town in them. He had a point, of course. The appointed time for the fracas was getting closer and buffs were beginning to stream into town to bask in the atmosphere of threatened death. Everybody knew what a military center, on the outskirts of a fracas reservation such as the Catskills, was like immediately preceding a clash between rival corporations. The high strung gaiety, the drinking, the overtranking, the relaxation of mores. Even a Rank Private had it made. Admiring civilians to buy drinks and hang on your every word, and more important still, sensuous eyed women, their faces slack in thinly suppressed passion. It was a recognized phenomenon, even Max Mainz knew—this desire on the part of women Telly fans to date a man, and then watch him later, killing or being killed.

"Time enough to wear your fancy uniform," Joe Mauser growled at him. "In fact, tomorrow's a local election day. Parlay that up on top of all the fracas fans gravitating into town and you'll have a wingding the likes of nothing you've seen before."

"Well yessir," Max begrudged. "Where're we going now, captain?"

"To the airport. Come along."

Joe Mauser led the way to his sports hovercar and as soon as the two were settled into the bucket seats, hit the lift lever with the butt of his left hand. Aircushion borne, he tread down on the accelerator.

Max Mainz was impressed. "You know," he said. "I never been in one of these swanky sports jobs before. The kinda car you can afford on the income of a Mid-Lower's stock aren't—"

"Knock it off," Joe said wearily. "Carping we'll always have with us

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evidently, but in spite of all the beefing in every strata from Low-Lower to Upper-Middle, I've yet to see any signs of organized protest against our present politico-economic system."

"Hey," Max said. "Don't get me wrong. What was good enough for Dad, is good enough for me. You won't catch me talking against the government."

"Hm-m-m," Joe murmured. "And all the other cliches taught to us to preserve the status quo, our People's Capitalism." They were reaching the outskirts of town, crossing the Esopus. The airport lay only a mile or so beyond.

It was obviously too deep for Max, and since he didn't understand, he assumed his superior didn't know what he was talking about. He said, tolerantly, "Well, what's wrong with People's Capitalism? Everybody

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owns the corporations. Damnsight better than the Sovs have."

Joe said sourly. "We've got one optical illusion, they've got another, Max. Over there they claim the proletariat owns the means of production. Great. But the Party members are the ones who control it, and, as a result they manage to do all right for themselves. The Party heirarchy over there are like our Uppers over here."

"Yeah." Max was being particularly dense. "I've seen a lot about it on Telly. You know, when there isn't a good fracas on, you tune to one of them educational shows, like—"

Joe winced at the term *educational,* but held his peace.

"It's pretty rugged over there. But in the West-world, the people own a corporation's stock and they run it and get the benefit."

"At least it makes a beautiful story," Joe said dryly. "Look, Max. Suppose you have a corporation that has two hundred thousand shares out and they're distributed among one hundred thousand and one persons. One hundred thousand of these own one share apiece, but the remaining stockholder owns the other hundred thousand."

"I don't know what you're getting at," Max said.

Joe Mauser was tired of the discussion. "Briefly," he said, "we have the illusion that this is a People's Capitalism, with all stock in the hands of the People. Actually, as ever before, the stock is in the hands of the Uppers, all except a mere dribble. They own the country and they run it for their own benefit."

Max shot a less than military glance at him. "Hey, you're not one of these Sovs yourself, are you?"

They were coming into the parking area near the Administration Building of the airport. "No," Joe said so softly that Max could hardly hear his words. "Only a Mid-Middle on the make."

Followed by Max, he strode quickly to the Administration Building, presented his credit identification at the desk and requested a light aircraft for a period of three hours. The clerk, hardly looking up, began going through motions, speaking into telescreens.

The clerk said finally, "You might have a small wait, sir. Quite a few of the officers involved in this fracas have been renting out taxi-planes almost as fast as they're available."

That didn't surprise Joe Mauser. Any competent officer made a point of an aerial survey of the battle reservation before going into a fracas. Aircraft, of course, couldn't be used *during* the fray, since they postdated the turn of the century, and hence were relegated to the cemetery of military devices along with such items as nuclear weapons, tanks, and even gasoline propelled vehicles of size to be useful.

Use an aircraft in a fracas, or even *build* an aircraft for military usage and you'd have a howl go up from the military attaches from the Sov-

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world that would be heard all the way to Budapest. Not a fracas went by but there were scores, if not hundreds, of military observers, keen-eyed to check whether or not any really modern tools of war were being illegally utilized. Joe Mauser sometimes wondered if the West-world observers, over in the Sov-world, were as hair fine in their living up to the rules of the Universal Disarmament Pact. Probably. But, for that matter, they didn't have the same system of fighting fracases over there, as in the West.

Max took a chair while he waited and thumbed through a fan magazine. From time to time he found his own face in such publications. He was a third-rate celebrity, really. Luck hadn't been with him so far as the buffs were concerned. They wanted spectacular victories, murderous situations in which they could lose themselves in vicarious sadistic thrills. Joe had reached most of his peaks while in retreat, or commanding a holding action. His officers appreciated him and so did the ultra-knowledgable fracas buffs—but he was all but an unknown to the average dim wit who spent most of his life glued to the Telly set, watching men butcher each other.

On the various occasions when matters had pickled and Joe had to fight his way out against difficult odds, using spectacular tactics in desperation, he was almost always off camera. Purely luck. On top of skill, determination, experience and courage, you had to have luck in the Military Category to get anywhere.

This time Joe was going to manufacture his own.

A voice said, "Ah, Captain Mauser."

Joe looked up, then came to his feet quickly. In automatic reflex, he began to come to the salute but then caught himself. He said stiffly, "My compliments, Marshall Cogswell."

The other was a smallish man, but strikingly strong of face and strongly built. His voice was clipped, clear and had the air of command as though born with it. He, like Joe, wore mufti and now extended his hand to be shaken.

"I hear you've signed up with Baron Haer, captain. I was rather expecting you to come in with me. Had a place for a good aide de camp. Liked your work in that last fracas we went through together."

"Thank you, sir," Joe said. Stonewall Cogswell was as good a tactician as freelanced and he was more than that. He was a judge of men and a stickler for detail. And right now, if Joe Mauser knew Marshal Stonewall Cogswell as well as he thought, Cogswell was smelling a rat. There was no reason why old pro Joe Mauser should sign up with a sure loser like Vacuum Tube when he could have earned more shares taking a commission with Hovercraft.

He was looking at Joe brightly, the question in his eyes. Three or four of his staff were behind a few paces, looking polite, but Cogswell didn't bring them into the conversa-

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tion. Joe knew most by sight. Good men all. Old pros all. He felt another twinge of doubt.

Joe had to cover. He said, "I was offered a particularly good contract, sir. Too good to resist."

The other nodded, as though inwardly coming to a satisfactory conclusion. "Baron Haer's connections, eh? He's probably offered to back you for a bounce in caste. Is that it, Joe?"

Joe Mauser flushed. Stonewall Cogswell knew what he was talking about. He'd been born into Middle status himself and had become an Upper the hard way. His path wasn't as long as Joe's was going to be, but long enough and he knew how rocky the climb was. How very rocky.

Joe said, stiffly, "I'm afraid I'm in no position to discuss my commander's military contracts, marshal. We're in mufti, but after all—"

Cogswell's lean face registered one of his infrequent grimaces of humor. "I understand, Joe. Well, good luck and I hope things don't pickle for you in the coming fracas. Possibly we'll find ourselves aligned together again at some future time."

"Thank you, sir," Joe said, once more having to catch himself to prevent an automatic salute.

Cogswell and his staff went off, leaving Joe looking after them. Even the marshal's staff members were top men any of whom could have conducted a divisional magnitude fracas. Joe felt the coldness in his stomach again. Although it must have looked like a cinch, the enemy wasn't taking any chances whatsoever. Cogswell and his officers were undoubtedly here at the airport for the same reason as Joe. They wanted a thorough aerial reconnaissance of the battlefield to be, before the issue was joined.

Max was standing at his elbow. "Who was that, sir? Looks like a real tough one."

"He is a real tough one," Joe said sourly. "That's Stonewall Cogswell, the best field commander in North America."

Max pursed his lips. "I never seen him out of uniform before. Lots of times on Telly, but never out of uniform. I thought he was taller than that."

"He fights with his brains," Joe said, still looking after the craggy field marshal. "He doesn't have to be any taller."

Max scowled. "Where'd he ever get that nickname, sir?"

"Stonewall?" Joe was turning to resume his chair and magazine. "He's supposed to be a student of a top general back in the American Civil War. Uses some of the original Stonewall's tactics."

Max was out of his depth. "American Civil War? Was that much of a fracas, captain. It musta been before my time."

"It was quite a fracas," Joe said dryly. "Lot of good lads died. A hundred years after it was fought, the *reasons* it was fought seemed about as valid as those we fight fracases for today. Personally I—"

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He had to cut it short. They were calling him on the address system. His aircraft was ready. Joe made his way to the hangars, followed by Max Mainz. He was going to pilot the airplane himself and old Stonewall Cogswell would have been surprised at what Joe Mauser was looking for.

V

By the time they had returned to quarters, there was a message waiting for Captain Mauser. He was to report to the officer commanding reconnaissance.

Joe redressed in the Haer kilts and proceeded to headquarters.

The officer commanding reconnaissance turned out to be none other than Balt Haer, natty as ever, and, as ever, arrogantly tapping his swagger stick against his leg.

"Zen! Captain," he complained. "Where have you been? Off on a trank kick? We've got to get organized."

Joe Mauser snapped him a salute. "No, sir. I rented an aircraft to scout out the terrain over which we'll be fighting."

"Indeed. And what were your impressions, captain?" There was an overtone which suggested that it made little difference what impressions a captain of cavalry might have gained.

Joe shrugged. "Largely mountains, hills, woods. Good reconnaissance is going to make the difference in this one. And in the fracas itself cavalry is going to be more important than either artillery or infantry. A Nathan Forrest fracas, sir. A matter of getting there fustest with the mostest."

Balt Haer said amusedly. "Thanks for your opinion, captain. Fortunately, our staff has already come largely to the same conclusions. Undoubtedly, they'll be glad to hear your wide experience bears them out."

Joe said evenly, "It's a rather obvious conclusion, of course." He took this as it came, having been through it before. The dilettante amateur's dislike of the old pro. The amateur in command who knew full well he was less capable than many of those below him in rank.

"Of course, captain," Balt Haer flicked his swagger stick against his leg. "But to the point. Your squadron is to be deployed as scouts under my overall command. You've had cavalry experience, I assume."

"Yes, sir. In various fracases over the past fifteen years."

"Very well. Now then, to get to the reason I have summoned you. Yesterday in my father's office you intimated that you had some grandiose scheme which would bring victory to the Haer colors. But then, on some thin excuse, refused to divulge just what the scheme might be."

Joe Mauser looked at him unblinkingly.

Balt Haer said: "Now I'd like to have your opinion on just how Vacuum Tube Transport can extract itself from what would seem a poor position at best."

In all there were four others in the

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office, two women clerks fluttering away at typers, and two of Balt Haer's junior officers. They seemed only mildly interested in the conversation between Balt and Joe.

Joe wet his lips carefully. The Haer scion was his commanding officer. He said, "Sir, what I had in mind is a new gimmick. At this stage, if I told anybody and it leaked, it'd never be effective, not even this first time."

Haer observed him coldly. "And you think me incapable of keeping your secret, ah, *gimmick,* I believe is the idiomatic term you used."

Joe Mauser's eyes shifted around the room, taking in the other four, who were now looking at him.

Balt Haer rapped, "These members of my staff are all trusted Haer employees, Captain Mauser. They are not fly-by-night freelancers hired for a week or two."

Joe said, "Yes, sir. But it's been my experience that one person can hold a secret. It's twice as hard for two, and from there on it's a decreasing probability in a geometric ratio."

The younger Haer's stick rapped the side of his leg, impatiently. "Suppose I inform you that this is a command, captain? I have little confidence in a supposed gimmick that will rescue our forces from disaster and I rather dislike the idea of a captain of one of my squadrons dashing about with such a bee in his bonnet when he should be obeying my commands."

Joe kept his voice respectful. "Then, sir, I'd request that we take the matter to the Commander in Chief, your father."

"Indeed!"

Joe said, "Sir, I've been working on this a long time. I can't afford to risk throwing the idea away."

Balt Haer glared at him. "Very well, captain. I'll call your bluff. come along." He turned on his heel and headed from the room.

Joe Mauser shrugged in resignation and followed him.

The old Baron wasn't much happier about Joe Mauser's secrets than was his son. It had only been the day before that he had taken Joe on, but already he had seemed to have aged in appearance. Evidently, each hour that went by made it increasingly clear just how perilous a position he had assumed. Vacuum Tube Transport had elbowed, buffaloed, bluffed and edged itself up to the outskirts of the really big time. The Baron's ability, his aggressiveness, his flair, his political pull, had all helped, but now the chips were down. He was up against one of the biggies, and this particular biggy was tired of ambitious little Vacuum Tube Transport.

He listened to his son's words, listened to Joe's defense.

He said, looking at Joe, "If I understand this, you have some scheme which you think will bring victory in spite of what seems a disasterous situation."

"Yes, sir."

The two Haers looked at him, one

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impatiently, the other in weariness.

Joe said, "I'm gambling everything on this, sir. I'm no Rank Private in his first fracas. I deserve to be given some leeway."

Balt Haer snorted. "Gambling everything! What in Zen would *you* have to gamble, captain? The whole Haer family fortunes are tied up. Hovercraft is out for blood. They won't be satisfied with a token victory and a negotiated compromise. They'll devastate us. Thousands of mercenaries killed, with all that means in indemnities; millions upon million in expensive military equipment, most of which we've had to hire and will have to recompensate for. Can you imagine the value of our stock after Stonewall Cogswell has finished with us? Why, every two by four trucking outfit in North America will be challenging us, and we won't have the forces to meet a minor skirmish."

Joe reached into an inner pocket and laid a sheaf of documents on the desk of Baron Malcom Haer. The Baron scowled down at them.

Joe said simply, "I've been accumulating stock since before I was eighteen and I've taken good care of my portfolio in spite of taxes and the various other pitfalls which make the accumulation of capital practically impossible. Yesterday, I sold all of my portfolio I was legally allowed to sell and converted to Vacuum Tube Transport." He added, dryly, "Getting it at an excellent rate, by the way."

Balt Haer mulled through the papers, unbelievingly. "Zen!" he ejaculated. "The fool really did it. He's sunk a small fortune into our stock."

Baron Haer growled at his son, "You seem considerably more convinced of our defeat than the captain, here. Perhaps I should reverse your positions of command."

His son grunted, but said nothing.

Old Malcom Haer's eyes came back to Joe. "Admittedly, I thought you on the romantic side yesterday, with your hints of some scheme which would lead us out of the wilderness, so to speak. Now I wonder if you might not really have something. Very well, I respect your claimed need for secrecy. Espionage is not exactly an antiquated military field."

"Thank you, sir."

But the Baron was still staring at him. "However, there's more to it than that. Why not take this great scheme to Marshal Cogswell? And yesterday you mentioned that the Telly sets of the nation would be tuned in on this fracas, and obviously you are correct. The question becomes, what of it?"

The fat was in the fire now. Joe Mauser, avoided the haughty stare of young Balt Haer and addressed himself to the older man. "You have political pull, sir. Oh, I know you don't make and break presidents. You couldn't even pull enough wires to keep Hovercraft from making this a divisional magnitude fracas—but you have pull enough for my needs."

Baron Haer leaned back in his chair, his barrellike body causing that article of furniture to creak. He

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crossed his hands over his stomach. "And what are your needs, Captain Mauser?"

Joe said evenly, "If I can bring this off, I'll be a fracas buff celebrity. I don't have any illusions about the fickleness of the Telly fans, but for a day or two I'll be on top. If at the same time I had your all out support, pulling what strings you could reach—"

"Why then, you'd be promoted to Upper, wouldn't you captain?" Balt Haer finished for him, amusement in his voice.

"That's what I'm gambling on," Joe said evenly.

The younger Haer grinned at his father superciliously. "So our captain says he will defeat Stonewall Cogswell in return for you sponsoring his becoming a member of the nation's elite."

Good Heavens, is the supposed cream of the nation now selected on no higher a level than this?" There was sarcasm in the words.

The three men turned. It was the girl Joe had bumped into the day before. The Haers didn't seem surprised at her entrance.

"Nadine," the older man growled. "Captain Joseph Mauser who has been given a commission in our forces."

Joe went through the routine of a Middle of officer's rank being introduced to a lady of Upper caste. She smiled at him, somewhat mockingly, and failed to make standard response.

Nadine Haer said, "I repeat, what is this service the captain can render the house of Haer so important that pressure should be brought to raise him to Upper caste? It would seem unlikely that he is a noted scientist, an outstanding artist, a great teacher—"

Joe said, uncomfortably, "They say the military is a science, too."

Her expression was almost as haughty as that of her brother. "Do they? I have never thought so."

"Really, Nadine," her father grumbled. "This is hardly your affair."

"No? In a few days I shall be repairing the damage you have allowed, indeed sponsored, to be committed upon the bodies of possibly thousands of now healthy human beings."

Balt said nastily, "Nobody asked you to join the medical staff, Nadine. You could have stayed in your laboratory, figuring out new methods of preventing the human race from replenishing itself."

The girl was obviously not the type to redden, but her anger was manifest. She spun on her brother. "If the race continues its present maniac course, possibly more effective methods of birth control *are* the most important development we could make. Even to the ultimate discovery of preventing all future conception."

Joe caught himself in mid-chuckle.

But not in time. She spun on him in his turn. "Look at yourself in that silly skirt. A professional soldier! A killer! In my opinion the most useless occupation ever devised by man. Parasite on the best and useful mem-

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bers of society. Destroyer by trade!"

Joe began to open his mouth, but she overrode him. "Yes, yes. I know. I've read all the nonsense that has accumulated down through the ages about the need for, the glory of, the sacrifice of the professional soldier. How they defend their country. How they give all for the common good. Zen! What nonsense."

Balt Haer was smirking sourly at her. "The theory today is, Nadine, old thing, that professionals such as the captain are gathering experience in case a serious fracas with the Sovs ever develops. Meanwhile his training is kept at a fine edge fighting in our inter-corporation, inter-union, or union-corporation fracases that develop in our private enterprise society."

She laughed her scorn. "And what a theory! Limited to the weapons which prevailed before 1900. If there was ever real conflict between the Sov-world and our own, does anyone really believe either would stick to such arms? Why, aircraft, armored vehicles, yes, and nuclear weapons and rockets, would be in overnight use."

Joe was fascinated by her furious attack. He said, "Then, what would you say was the purpose of the fracases, Miss—"

"Circuses," she snorted. "The old Roman games, all over again, and a hundred times worse. Blood and guts sadism. The quest of a frustrated person for satisfaction in another's pain. Our Lowers of today are as useless and frustrated as the Roman proletariat and potentially they're just as dangerous as the mob that once dominated Rome. Automation, the second industrial revolution, has eliminated for all practical purposes the need for their labor. So we give them bread and circuses. And every year that goes by the circuses must be increasingly sadistic, death on an increasing scale, or they aren't satisfied. Once it was enough to have fictional mayhem, cowboys and Indians, gangsters, or G.I.s versus the Nazis, Japs or Commies, but that's passed. Now we need *real* blood and guts."

Baron Haer snapped finally, "All right, Nadine. We've heard this lecture before. I doubt if the captain is interested, particularly since you don't seem to be able to get beyond the protesting stage and have yet to come up with an answer."

"I have an answer!"

"Ah?" Balt Haer raised his eyebrows, mockingly.

"Yes! Overthrow this silly status society. Resume the road to progress. Put our people to useful endeavor, instead of sitting in front of their Telly sets, taking trank pills to put them in a happy daze and watching sadistic fracases to keep them in thrills, and their minds from their condition."

Joe had figured on keeping out of the controversy with this firebrand, but now, really interested, he said, "Progress to where?"

She must have caught in his tone that he wasn't needling. She frowned at him. "I don't know man's goal, if

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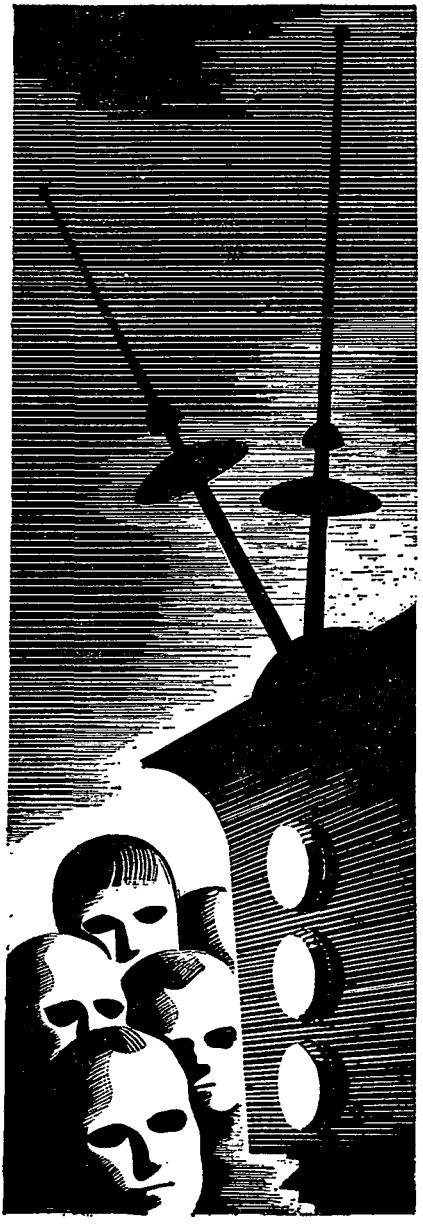

there is one. I'm not even sure it's important. It's the road that counts. The endeavor. The dream. The effort expended to make a world a better place than it was at the time of your birth."

Balt Haer said mockingly, "That's the trouble with you, Sis. Here we've reached Utopia and you don't admit it."

"Utopia!"

"Certainly. Take a poll. You'll find nineteen people out of twenty happy with things just the way they are. They have full tummies and security, lots of leisure and trank pills to make matters seem even rosier than they are—and they're rather rosy already."

"Then what's the necessity of this endless succession of bloody fracases, covered to the most minute bloody detail on the Telly?"

Baron Haer cut things short. "We've hashed and rehashed this before, Nadine and now we're too busy to debate further." He turned to Joe Mauser. "Very well, captain, you have my pledge. I wish I felt as optimistic as you seem to be about your prospects. That will be all for now, captain."

Joe saluted and executed an about face.

In the outer offices, when he had closed the door behind him, he rolled his eyes upward in mute thanks to whatever powers might be. He had somehow gained the emnity of Balt, his immediate superior, but

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he'd also gained the support of Baron Haer himself, which counted considerably more.

He considered for a moment, Nadine Haer's words. She was obviously a malcontent, but, on the other hand, her opinions of his chosen profession weren't too different than his own. However, given this victory, this upgrading in caste, and Joe Mauser would be in a position to retire.

The door opened and shut behind him and he half turned.

Nadine Haer, evidently still caught up in the hot words between herself and her relatives, glared at him. All of which stressed the beauty he had noticed the day before. She was an almost unbelievably pretty girl, particularly when flushed with anger.

It occurred to him with a blowlike suddenness that, if his caste was raised to Upper, he would be in a position to woo such as Nadine Haer.

He looked into her furious face and said, "I was intrigued, Miss Haer with what you had to say, and I'd like to discuss some of your points. I wonder if I could have the pleasure of your company at some nearby refreshment—"

"My, how formal an invitation, captain. I suppose you had in mind sitting and flipping back a few trank pills."

Joe looked at her. "I don't believe I've had a trank in the past twenty years, Miss Haer. Even as a boy, I didn't particularly take to having my senses dulled with drug induced pleasure."

Some of her fury was abating, but she was still critical of the professional mercenary. Her eyes went up and down his uniform in scorn. "You seem to make pretenses of being cultivated, captain. Then why your chosen profession?"

He'd had the answer to that for long years. He said now, simply, "I told you I was born a Lower. Given that, little counts until I fight my way out of it. Had I been born in a feudalist society, I would have attempted to batter myself into the nobility. Under classical capitalism, I would have done my utmost to accumulate a fortune, enough to reach an effective position in society. Now, under People's Capitalism . . ."

She snorted, "Industrial Feudalism would be the better term."

". . . I realize I can't even start to fulfill myself until I am a member of the Upper caste."

Her eyes had narrowed, and the anger was largely gone. "But you chose the military field in which to better yourself?"

"Government propaganda to the contrary, it is practically impossible to raise yourself in other fields. I didn't build this world, possibly I don't even approve of it, but since I'm in it I have no recourse but to follow its rules."

Her eyebrows arched. "Why not try to change the rules?"

Joe blinked at her.

Nadine Haer said, "Let's look up that refreshment you were talking about. In fact, there's a small coffee bar around the corner where it'd be possible for one of Baron Haer's

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brood to have a cup with one of her father's officers of Middle caste."

VI

The following morning, hands on the pillow beneath his head, Joe Mauser stared up at the ceiling of his room and rehashed his session with Nadine Haer. It hadn't taken him five minutes to come to the conclusion that he was in love with the girl, but it had taken him the rest of the evening to keep himself under rein and not let the fact get through to her.

He wanted to talk about the way her mouth tucked in at the corners, but she was hot on the evolution of society. He would have liked to have kissed that impossibly perfectly shaped ear of hers, but she was all for exploring the reasons why man had reached his present impasse. Joe was for holding hands, and staring into each other's eyes, she was for delving into the differences between the West-world and the Sov-world and the possibility of resolving them.

Of course, to keep her company at all it had been necessary to suppress his own desires and to go along. It obviously had never occurred to her that a Middle might have romantic ideas involving Nadine Haer. It had simply not occurred to her, no matter the radical teachings she advocated.

Most of their world was predictable from what had gone before. In spite of popular fable to the contrary, the division between classes had become increasingly clear. Among other things, tax systems were such that it became all but impossible for a citizen born poor to accumulate a fortune. Through ability he might rise to the point of earning fabulous sums—and wind up in debt to the tax collector. A great inventor, a great artist, had little chance of breaking into the domain of what finally became the small percentage of the population now known as Uppers. Then, too, the rising cost of a really good education became such that few other than those born into the Middle or Upper castes could afford the best of schools. Castes tended to perpetuate themselves.

Politically, the nation had fallen increasingly deeper into the two-party system, both parties of which were tightly controlled by the same group of Uppers. Elections had become a farce, a great national holiday in which stereotyped patriotic speeches, pretenses of unity between all castes, picnics, beer busts and trank binges predominated for one day.

Economically, too, the augurs had been there. Production of the basics had become so profuse that poverty in the old sense of the word had become nonsensical. There was an abundance of the necessities of life for all. Social security, socialized medicine, unending unemployment insurance, old age pensions, pensions for veterans, for widows and children, for the unfit, pensions and doles for this, that and the other, had

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doubled, and doubled again, until everyone had security for life. The Uppers, true enough, had opulence far beyond that known by the Middles and lived like Gods compared to the Lowers. But all had security.

They had agreed, thus far, Joe and Nadine. But then had come debate.

Then why," Joe had asked her, "haven't we achieved what your brother called it? Why isn't this Utopia? Isn't it what man has been yearning for, down through the ages? Where did the wheel come off? What happened to the dream?"

Nadine had frowned at him—beautifully, he thought. "It's not the first time man has found abundance in a society, though never to this degree. The Incas had it, for instance."

"I don't know much about them," Joe admitted. "An early form of communism with a sort of military-priesthood at the top."

She had nodded, her face serious, as always. "And for themselves, the Romans more or less had it—at the expense of the nations they conquered, of course."

"And—" Joe prodded.

"And in these examples the same thing developed. Society ossified. Joe," she said, using his first name for the first time, and in a manner that set off a new count down in his blood, "a ruling caste and a socio-economic system perpetuates itself, just so long as it ever can. No matter what damage it may do to society as a whole, it perpetuates itself even to the point of complete destruction of everything.

"Remember Hitler? Adolf the Aryan and his Thousand Year Reich? When it became obvious he had failed, and the only thing that could result from continued resistance would be destruction of Germany's cities and millions of her people, did he and his clique resign or surrender? Certainly not. They attempted to bring down the whole German structure in a Götterdammerung."

Nadine Haer was deep into her theme, her eyes flashing her conviction. "A socio-economic system reacts like a living organism. It attempts to live on, indefinitely, agonizingly, no matter how antiquated it might have become. The Roman politico-economic system continued for centuries after it should have been replaced. Such reformers as the Gracchus brothers were assassinated or thrust aside so that the entrenched elements could perpetuate themselves, and when Rome finally fell, darkness descended for a thousand years on Western progress."

Joe had never gone this far in his thoughts. He said now, somewhat uncomfortably, "Well, what would replace what we have now? If you took power from you Uppers, who could direct the country? The Lowers? That's not even funny. Take away their fracases and their trank pills and they'd go berserk. They don't *want* anything else."

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Her mouth worked. "Admittedly, we've already allowed things to deteriorate much too far. We should have done something long ago. I'm not sure I know the answer. All I know is that in order to maintain the status quo, we're not utilizing the efforts of more than a fraction of our people. Nine out of ten of us spend our lives sitting before the Telly, sucking tranks. Meanwhile, the motivation for continued progress seems to have withered away. Our Upper political circles are afraid some seemingly minor change might avalanche, so more and more we lean upon the old way of doing things."

Joe had put up mild argument. "I've heard the case made that the Lowers are fools and the reason our present socio-economic system makes it so difficult to rise from Lower to Upper is that you cannot make a fool understand he is one. You can only make him angry. If some, who are not fools, are allowed to advance from Lower to Upper, the vast mass who are fools will be angry because they are not allowed to. That's why the Military Category is made a channel of advance. To take that road, a man gives up his security and he'll die if he's a fool."

Nadine had been scornful. "That reminds me of the old contention by racial segregationalists that the Negroes *smelled* bad. First they put them in a position where they had insufficient bathing facilities, their diet inadequate, and their teeth uncared for, and then protested that they couldn't be associated with because of their odor. Today, we are born within our castes. If an Upper is inadequate, he nevertheless remains an Upper. An accident of birth makes him an aristocrat; environment, family, training, education, friends, traditions and laws maintain him in that position. But a Lower who potentially has the greatest of value to society, is born handicapped and he's hard put not to wind up before a Telly, in a mental daze from trank. Sure he's a fool, he's never been *allowed* to develop himself."

Yes, Joe reflected now, it had been quite an evening. In a life of more than thirty years devoted to rebellion, he had never met anyone so outspoken as Nadine Haer, nor one who had thought it through as far as she had.

He grunted. His own revolt was against the level at which he had found himself in society, not the structure of society itself. His whole *raison d'etre* was to lift himself to Upper status. It came as a shock to him to find a person he admired who had been born into Upper caste, desirous of tearing the whole system down.

His thoughts were interrupted by the door opening and the face of Max Mainz grinning in at him. Joe was mildly surprised at his orderly not knocking before opening the door. Max evidently had a lot to learn.

The little man blurted, "Come on, Joe. Let's go out on the town!"

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"Joe?" Joe Mauser raised himself to one elbow and stared at the other. "Leaving aside the merits of your suggestion for the moment, do you think you should address an officer by his first name?"

Max Mainz came fully into the bedroom, his grin still wider. "You forgot! It's election day!"

"Oh." Joe Mauser relaxed into his pillow. "So it is. No duty for today, eh?"

"No duty for anybody," Max crowed. "What'd you say we go into town and have a few drinks in one of the Upper bars?"

Joe grunted, but began to arise. "What'll that accomplish? On election day, most of the Uppers get done up in their oldest clothes and go slumming down in the Lower quarters."

Max wasn't to be put off so easily. "Well, wherever we go, let's get going. Zen! I'll bet this town is full of fracas buffs from as far as Philly. And on election day, to boot. Wouldn't it be something if I found me a real fracas fan, some Upper-Upper dame?"

Joe laughed at him, even as he headed for the bathroom. As a matter of fact, he rather liked the idea of going into town for the show. "Max," he said over his shoulder, "you're in for a big disappointment. They're all the same. Upper, Lower, or Middle."

"Yeah?" Max grinned back at him. "Well, I'd like the pleasure of finding out if that's true by personal experience."

VII

In a far away past, Kingston had once been the capital of the United States. For a short time, when Washington's men were in flight after the debacle of their defeat in New York City, the government of the United Colonies had held session in this Hudson River town. It had been its one moment of historic glory, and afterward Kingston had slipped back into being a minor city on the edge of the Catskills, approximately halfway between New York and Albany.

Of most recent years, it had become one of the two recruiting centers which bordered the Catskill Military Reservation, which in turn was one of the score or so population cleared areas throughout the continent where rival corporations or unions could meet and settle their differences in combat—given permission of the Military Category Department of the government. And permission was becoming ever easier to acquire.

It had slowly evolved, the resorting to trial by combat to settle disputes between competing corporations, disputes between corporations and unions, disputes between unions over jurisdiction. Slowly, but predictably. Since the earliest days of the first industrial revolution, conflict between these elements had often broken into violence, sometimes on a scale comparable to minor warfare. An early example was the union organizing in Colorado when armed

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elements of the Western Federation of Miners shot it out with similarly armed "detectives" hired by the mine owners, and later with the troops of an unsympathetic State government.

By the middle of the Twentieth-Century, unions had become one of the biggest businesses in the country, and by this time a considerable amount of the industrial conflict had shifted to fights between them for jurisdiction over dues-paying members. Battles on the waterfront, assassination and counter-assassination by gun toting goon squads dominated by gangsters, industrial sabotage, frays between pickets and scabs —all were common occurrences.

But it was the coming of Telly which increasingly brought such conflicts literally before the public eye. Zealous reporters made ever greater effort to bring the actual mayhem before the eyes of their viewers, and never were their efforts more highly rewarded.

A society based upon private endeavor is as jealous of a vacuum as is mother nature. Give a desire that can be filled profitably, and the means can somehow be found to realize it.

At one point in the nation's history, the railroad lords had dominated the economy, later it became the petroleum princes of Texas and elsewhere, but toward the end of the Twentieth Century the communications industries slowly gained prominence. Nothing was more greatly in demand than feeding the insatiable maw of the Telly fan, nothing, ultimately, became more profitable.

And increasingly, the Telly buff endorsed the more sadistic of the fictional and nonfictional programs presented him. Even in the earliest years of the industry, producers had found that murder and mayhem, war and frontier gunfights, took precedence over less gruesome subjects. Music was drowned out by gunfire, the dance replaced by the shuffle of cowboy and rustler advancing down a dusty street toward each other, their fingertips brushing the grips of their six-shooters, the comedian's banter fell away before the chatter of the gangster's tommy gun.

And increasing realism was demanded. The Telly reporter on the scene of a police arrest, preferably a murder, a rumble between rival gangs of juvenile delinquents, a longshoreman's fray in which scores of workers were hospitalized. When attempts were made to suppress such broadcasts, the howl of freedom of speech and the press went up, financed by tycoons clever enough to realize the value of the subjects they covered so adequately.

The vacuum was there, the desire, the *need*. Bread the populace had. Trank was available to all. But the need was for the circus, the vicious, sadistic circus, and bit by bit, over the years and decades, the way was found to circumvent the country's laws and traditions to supply the need.

Aye, a way is always found. The final Universal Disarmament Pact

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which had totally banned all weapons invented since the year 1900 and provided for complete inspection, had not ended the fear of war. And thus there was excuse to give the would-be soldier, the potential defender of the country in some future internation conflict, practical experience.

Slowly tolerance grew to allow union and corporation to fight it out, hiring the services of mercenaries. Slowly rules grew up to govern such fracases. Slowly a department of government evolved. The Military Category became as acceptable as the next, and the mercenary a valued, even idolized, member of society. And the field became practically the only one in which a status quo orientated socio-economic system allowed for advancement in caste.

Joe Mauser and Max Mainz strolled the streets of Kingston in an extreme of atmosphere seldom to be enjoyed. Not only was the advent of a divisional magnitude fracas only a short period away, but the freedom of an election day as well. The carnival, the Mardi Gras, the fete, the fiesta, of an election. Election Day, when each aristocrat became only a man, and each man an aristocrat, free of all society's artificially conceived, caste perpetuating rituals and taboos.

Carnival! The day was young, but already the streets were thick with revelers, with dancers, with drunks. A score of bands played, youngsters in particular ran about attired in costume, there were barbeques and flowing beer kegs. On the outskirts of town were roller coasters and ferris wheels, fun houses and drive-it-yourself miniature cars. Carnival!

Max said happily, "You drink, Joe? Or maybe you like trank, better." Obviously, he loved to roll the other's first name over his tongue.

Joe wondered in amusement how often the little man had found occasion to call a Mid-Middle by his first name. "No trank," he said. "Alcohol for me. Mankind's old faithful."

"Well," Max debated, "get high on alcohol and bingo, a hangover in the morning. But trank? You wake up with a smile."

"And a desire for more trank to keep the mood going," Joe said wryly. "Get smashed on alcohol and you suffer for it eventually."

"Well, that's one way of looking at it," Max argued happily. "So let's start off with a couple of quick ones in this here Upper joint."

Joe looked the place over. He didn't know Kingston overly well, but by the appearance of the building and by the entry, it was probably the swankiest hotel in town. He shrugged. So far as he was concerned, he appreciated the greater comfort and the better service of his Middle caste bars, restaurants and hotels over the ones he had patronized when a Lower. However, his wasn't an immediate desire to push into the preserves of the Uppers; not until he had won rightfully to their status.

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But on this occasion the little fellow wanted to drink at an Upper bar. Very well, it was election day. "Let's go," he said to Max.

In the uniform of a Rank Captain of the Military Category, there was little to indicate caste level, and ordinarily given the correct air of nonchalance, Joe Mauser, in uniform, would have been able to go anywhere, without so much as a raised eyebrow—until he had presented his credit card, which indicated his caste. But Max was another thing. He was obviously a Lower, and probably a Low-Lower at that.

But space was made for them at a bar packed with election day celebrants, politicians involved in the day's speeches and voting, higher ranking officers of the Haer forces, having a day off, and various Uppers of both sexes in town for the excitement of the fracas to come.

"Beer," Joe said to the bartender.

"Not me," Max crowed. "Champagne. Only the best for Max Mainz. Give me some of that champagne liquor I always been hearing about."

Joe had the bill credited to his card, and they took their bottles and glasses to a newly abandoned table. The place was too packed to have awaited the services of a waiter, although poor Max probably would have loved such attention. Lower, and even Middle bars and restaurants were universally automated, and the waiter or waitress a thing of yesteryear.

Max looked about the room in awe. "This is living," he announced. "I wonder what they'd say if I went to the desk and ordered a room."

Joe Mauser wasn't as highly impressed as his batman. In fact, he'd often stayed in the larger cities, in hostelries as sumptuous as this, though only of Middle status. Kingston's best was on the mediocre side. He said, "They'd probably tell you they were filled up."

Max was indignant. "Because I'm a Lower? It's *election* day."

Joe said mildly, "Because they probably are filled up. But for that matter, they might brush you off. It's not as though an Upper went to a Middle or Lower hotel and asked for accommodations. But what do you want, justice?"

Max dropped it. He looked down into his glass. "Hey," he complained, "what'd they give me? This stuff tastes like weak hard cider."

Joe laughed. "What did you think it was going to taste like?"

Max took another unhappy sip. "I thought it was supposed to be the best drink you could buy. You know, really strong. It's just bubbly wine."

A voice said, dryly, "Your companion doesn't seem to be a connoisseur of the French vintages, captain."

Joe turned. Balt Haer and two others occupied the table next to them.

Joe chuckled amiably and said, "Truthfully, it was my own reaction, the first time I drank sparkling wine, sir."

"Indeed," Haer said. "I can imagine." He fluttered a hand. "Lieuten-

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ant Colonel Paul Warren of Marshal Cogswell's staff, and Colonel Lajos Arpàd, of Budapest—Captain Joseph Mauser."

Joe Mauser came to his feet and clicked his heels, bowing from the waist in approved military protocol. The other two didn't bother to come to their feet, but did condescend to shake hands.

The Sov officer said, disinterestedly, "Ah yes, this is one of your fabulous customs, isn't it? On an election day, everyone is quite entitled to go anywhere. Anywhere at all. And, ah"—he made a sound somewhat like a giggle—"associate with anyone at all."

Joe Mauser resumed his seat then looked at him. "That is correct. A custom going back to the early history of the country when all men were considered equal in such matters as law and civil rights. Gentlemen, may I present Rank Private Max Mainz, my orderly."

Balt Haer, who had obviously already had a few, looked at him dourly. "You can carry these things to the point of the ludicrous, captain. For a man with your ambitions, I'm surprised."

The infantry officer the younger Haer had introduced as Lieutenant Colonel Warren, of Stonewall Cogswell's staff, said idly, "Ambitions? Does the captain have ambitions? How in Zen can a Middle have ambitions, Balt?" He stared at Joe Mauser superciliously, but then scowled. "Haven't I seen you somewhere before?"

Joe said evenly, "Yes, sir. Five years ago we were both with the marshal in a fracas on the Little Big Horn reservation. Your company was pinned down on a knoll by a battery of field artillery. The Marshal sent me to your relief. We sneaked in, up an arroyo, and were able to get most of you out."

"I was wounded," the colonel said, the superciliousness gone and a strange element in his voice above the alcohol there earlier.

Joe Mauser said nothing to that. Max Mainz was sitrring unhappily now. These officers were talking above his head, even as they ignored him. He had a vague feeling that he was being defended by Captain Mauser, but he didn't know how, or why.

Balt Haer had been occupied in shouting fresh drinks. Now he turned back to the table. "Well, colonel, it's all very secret, these ambitions of Captain Mauser. I understand he's been an aide de camp to Marshal Cogswell in the past, but the marshal will be distressed to learn that on this occasion Captain Mauser has a secret by which he expects to rout your forces. Indeed, yes, the captain is quite the strategist." Balt Haer laughed abruptly. "And what good will this do the captain? Why on my father's word, if he succeeds, all efforts will be made to make the captain a caste equal of ours. Not just on election day, mind you, but all three hundred sixty-five days of the year."

Joe Mauser was on his feet, his

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face expressionless. He said, "Shall we go, Max? Gentlemen, it's been a pleasure. Colonel Arpàd, a privilege to meet you. Colonel Warren, a pleasure to renew acquaintance." Joe Mauser turned and, trailed by his orderly, left.

Lieutenant Colonel Warren, pale, was on his feet too.

Balt Haer was chuckling. "Sit down, Paul. Sit down. Not important enough to be angry about. The man's a clod."

Warren looked at him bleakly. "I wasn't angry, Balt. The last time I saw Captain Mauser I was slung over his shoulder. He carried, tugged and dragged me some two miles through enemy fire."

Balt Haer carried it off with a shrug. "Well, that's his profession. Category Military. A mercenary for hire. I assume he received his pay."

"He could have left me. Common sense dictated that he leave me."

Balt Haer was annoyed. "Well, then we see what I've contended all along. The ambitious captain doesn't have common sense."

Colonel Paul Warren shook his head. "You're wrong there. Common sense Joseph Mauser has. Considerable ability, he has. He's one of the best combat men in the field. But I'd hate to serve under him,"

The Hungarian was interested. "But why?"

"Because he doesn't have luck, and in the dill you need luck." Warren grunted in sour memory. "Had the Telly cameras been focused on Joe Mauser, there at the Little Big Horn, he would have been a month long sensation to the Telly buffs, with all that means." He grunted again. "There wasn't a Telly team within a mile."

"The captain probably didn't realize that," Balt Haer snorted. "Otherwise his heroics would have been modified."

Warren flushed his displeasure and sat down. He said, "Possibly we should discuss the business before us. If your father is in agreement, the fracas can begin in three days." He turned to the representative of the Sov-world. "You have satisfied yourselves that neither force is violating the Disarmament Pact?"

Lajos Arpàd nodded. "We will wish to have observers on the field, itself, of course. But preliminary observation has been satisfactory." He had been interested in the play between these two and the lower caste officer. He said now, "Pardon me. As you know, this is my first visit to the, uh *West*. I am fascinated. If I understand what just transpired, our Captain Mauser is a capable junior officer ambitious to rise in rank and status in your society." He looked at Balt Haer. "Why are you opposed to his so rising?"

Young Haer was testy about the whole matter. "Of what purpose is an Upper caste if every Tom, Dick and Harry enters it at will?"

Warren looked at the door through which Joe and Max had exited from the cocktail lounge. He

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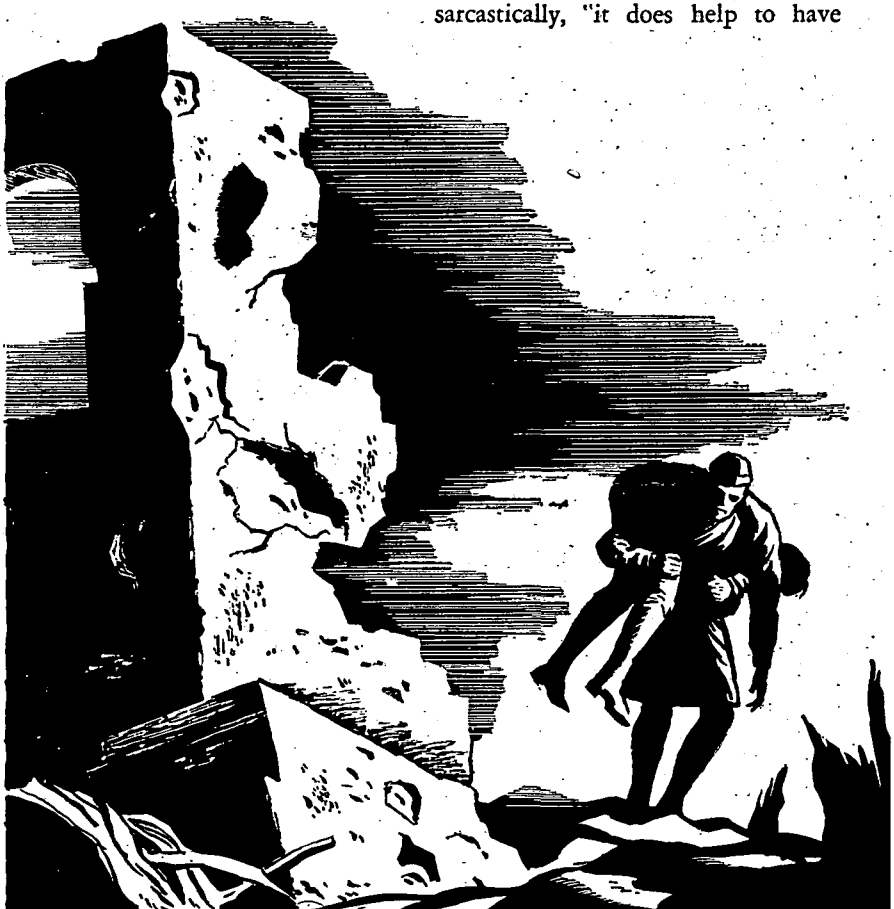
opened his mouth to say something, closed it again, and held his peace.

The Hungarian said, looking from one of them to the other, "In the Sov-world we seek out such ambitious persons and utilize their abilities."

Lieutenant Colonel Warren laughed abruptly. "So do we here *theorteically*. We are *free*, whatever that means. However," he added sarcastically, "it does help to have



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good schooling, good connections, relatives in positions of prominence, abundant shares of good stocks, that sort of thing. And these one is born with, in this free world of ours, Colonel Arpàd."

The Sov military observer clucked his tongue. "An indication of a declining society."

Balt Haer turned on him. "And is it any different in your world?" he said sneeringly. "Is it merely coincidence that the best positions in the Sov-world are held by Party members, and that it is all but impossible for anyone not born of Party member parents to become one? Are not the best schools filled with the children of Party members? Are not only Party members allowed to keep servants? And isn't it so that—"

Lieutenant Colonel Warren said, "Gentlemen, let us not start World War Three at this spot, at this late occasion."

VIII

Baron Malcolm Haer's field headquarters were in the ruins of a farm house in a town once known as Bearsville. His forces, and those of Marshal Stonewall Cogswell, were on the march but as yet their main bodies had not come in contact. Save for skirmishes between cavalry units, there had been no action. The ruined farm house had been a victim of an earlier fracas in this reservation which had seen in its comparatively brief time more combat than Belgium, that cockpit of Europe.

There was a sheen of oily moisture on the Baron's bulletlike head and his officers weren't particularly happy about it. Malcolm Haer characteristically went into a fracas with confidence, an aggressive confidence so strong that it often carried the day. In battles past, it had become a tradition that Haer's morale was worth a thousand men; the energy he expended was the despair of his doctors who had been warning him for a decade. But now, something was missing.

A forefinger traced over the military chart before them. "So far as we know, Marshal Cogswell has established his command here in Saugerties. Anybody have any suggestions as to why?"

A major grumbled, "It doesn't make much sense, sir. You know the marshal. It's probably a fake. If we have any superiority at all, it's our artillery."

"And the old fox wouldn't want to join the issue on the plains, down near the river," a colonel added. "It's his game to keep up into the mountains with his cavalry and light infantry. He's got Jack Alshuler's cavalry. Most experienced veterans in the field."

"I know who he's got," Haer growled in irritation. "Stop reminding me. Where in the devil is Balt?"

"Coming up, sir," Balt Haer said. He had entered only moments ago, a sheaf of signals in his hand. "Why didn't they make that date 1910, instaed of 1900? With radio, we could speed up communications—"

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His father interrupted testily. "Better still, why not make it 1945? Then we could speed up to the point where we could polish ourselves off. What have you got?"

Balt Haer said, his face in sulk, "Some of my lads based in West Hurley report concentrations of Cogswell's infantry and artillery near Ashokan reservoir."

"Nonsense," somebody snapped. "We'd have him."

The younger Haer slapped his swagger stick against his bare leg and kilt. "Possibly it's a feint," he admitted.

"How much were they able to observe?" his father demanded.

"Not much. They were driven off by a superior squadron. The Hovercraft forces are screening everything they do with heavy cavalry units. I told you we needed more—"

"I don't need your advice at this point," his father snapped. The older Haer went back to the map, scowling still. "I don't see what he expects to do, working out of Saugerties."

A voice behind them said, "Sir, may I have your permission—"

Half of the assembled officers turned to look at the newcomer.

Balt Haer snapped, "Captain Mauser. Why aren't you with your lads?"

"Turned them over to my second in command, sir," Joe Mauser said. He was standing to attention, looking at Baron Haer.

The Baron glowered at him. "What is the meaning of this cavalier intrusion, captain? Certainly, you must have your orders. Are you under the illusion that you are part of my staff?"

"No, sir," Joe Mauser clipped. "I came to report that I am ready to put into execution—"

"The great plan!" Balt Haer ejaculated. He laughed brittlely. "The second day of the fracas, and nobody really knows where old Cogswell is, or what he plans to do. And here comes the captain with his secret plan."

Joe looked at him. He said, evenly, "Yes, sir."

The Baron's face had gone dark, as much in anger at his son, as with the upstart cavalry captain. He began to growl ominously, "Captain Mauser, rejoin your command and obey your orders."

Joe Mauser's facial expression indicated that he had expected this. He kept his voice level however, even under the chuckling scorn of his immediate superior, Balt Haer.

He said, "Sir, I will be able to tell you where Marshal Cogswell is, and every troop at his command."

For a moment there was silence, all but a stunned silence. Then the major who had suggested the Saugerties field command headquarters were a fake, blurted a curt laugh.

"This is no time for levity, captain," Balt Haer clipped. "Get to your command."

A colonel said, "Just a moment, sir. I've fought with Joe Mauser before. He's a good man."

"Not that good," someone else huffed. "Does he claim to be clairvoyant?"

Joe Mauser said flatly. "Have a semaphore man posted here this after-

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noon. I'll be back at that time." He spun on his heel and left them.

Balt Haer rushed to the door after him, shouting, "Captain! That's an order! Return—"

But the other was obviously gone. Enraged, the younger Haer began to shrill commands to a noncom in the way of organizing a pursuit.

His father called wearily, "That's enough, Balt. Mauser has evidently taken leave of his senses. We made the initial mistake of encouraging this idea he had, or thought he had."

"We?" his son snapped in return. "I had nothing to do with it."

"All right, all right. Let's tighten up, here. Now, what other information have your scouts come up with?"

IX

At the Kingston airport, Joe Mauser rejoined Max Mainz, his face drawn now.

"Everything go all right?" the little man said anxiously.

"I don' know," Joe said. "I still couldn't tell them the story. Old Cogswell is as quick as a coyote. We pull this little caper today, and he'll be ready to meet it tomorrow."

He looked at the two-place sailplane which sat on the tarmac. "Everything all set?"

"Far as I know," Max said. He looked at the motorless aircraft. "You sure you been checked out on these things, captain?"

"Yes," Joe said. "I bought this particular soaring glider more than a year ago, and I've put almost a thousand hours in it. Now, where's the pilot of that light plane?"

A single-engined sports plane was attached to the glider by a fifty-foot nylon rope. Even as Joe spoke, a youngster poked his head from the plane's window and grinned back at them. "Ready?" he yelled.

"Come on, Max," Joe said. "Let's pull the canopy off this thing. We don't want it in the way while you're semaphoring."

A figure was approaching them from the Administration Building. A uniformed man, and somehow familiar.

"A moment, Captain Mauser!"

Joe placed him now. The Sovworld representative he'd met at Balt Haer's table in the Upper bar a couple of days ago. What was his name? Colonel Arpàd. Lajos Arpàd.

The Hungarian approached and looked at the sailplane in interest. "As a representative of my government, a military attache checking upon possibile violations of the Universal Disarmament Pact, may I request what you are about to do, captain?"

Joe Mauser looked at him emptily. "How did you know I was here and what I was doing?"

The Sov colonel smiled gently. "It was by suggestion of Marshal Cogswell. He is a great man for detail. It disturbed him that an . . . what did he call it? . . . an *old pro* like yourself should join with Vacuum Tube Transport, rather than Continental Hovercraft. He didn't think it made sense and suggested that possibly you

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had in mind some scheme that would utilize weapons of a post 1900 period in your efforts to bring success to Baron Haer's forces. So I have investigated, Captain Mauser."

"And the marshal knows about this sail plane?" Joe Mauser's face was blank.

"I didn't say that. So far as I know, he doesn't."

"Then, Colonel Arpàd, with your permission, I'll be taking off."

The Hungarian said, "With what end in mind, captain?"

"Using this glider as a reconnaissance aircraft."

"Captain, I warn you! Aircraft were not in use in warfare until—"

But Joe Mauser cut him off, equally briskly. "Aircraft were first used in combat by Pancho Villa's forces a few years previous to World War I. They were also used in the Balkan Wars of about the same period. But those were powered craft. This is a glider, invented and in use before the year 1900 and hence open to utilization."

The Hungarian clipped, "But the Wright Brothers didn't fly even gliders until—"

Joe looked him full in the face. "But you of the Sov world do not admit that the Wrights were the first to fly, do you?"

The Hungarian closed his mouth, abruptly.

Joe said evenly, "But even if Ivan Ivanovitch, or whatever you claim his name was, didn't invent flight of heavier than air craft, the glider was flown variously before 1900, including Otto Lilienthal in the 1890s, and was designed as far back as Leonardo da Vinci."

The Sov world colonel stared at him for a long moment, then gave an inane giggle. He stepped back and flicked Joe Mauser a salute. "Very well, captain. As a matter of routine, I shall report this use of an aircraft for reconnaissance purposes, and undoubtedly a commission will meet to investigate the propriety of the departure. Meanwhile, good luck!"

Joe returned the salute and swung a leg over the cockpit's side. Max was already in the front seat, his semaphore flags, maps and binoculars on his lap. He had been staring in dismay at the Sov officer, now was relieved that Joe had evidently pulled it off.

Joe waved to the plane ahead. Two mechanics had come up to steady the wings for the initial ten or fifteen feet of the motorless craft's passage over the ground behind the towing craft.

Joe said to Max, "did you explain to the pilot that under no circumstances was he to pass over the line of the military reservation, that we'd cut before we reached that point?"

"Yes, sir," Max said nervously. He'd flown before, on the commercial lines, but he'd never been in a glider.

They began lurching across the field, slowly, then gathering speed. And as the sailplane took speed, it took grace. After it had been pulled a hundred feet or so, Joe eased back the stick and it slipped gently into the air, four or five feet off the ground.

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The towing airplane was still taxiing, but with its tow airborne it picked up speed quickly. Another two hundred feet and it, too, was in the air and beginning to climb. The glider behind held it to a speed of sixty miles or so.

At ten thousand feet, the plane leveled off and the pilot's head swiveled to look back at them. Joe Mauser waved to him and dropped the release lever which ejected the nylon rope from the glider's nose. The plane dove away, trailing the rope behind it. Joe knew that the plane pilot would later drop it over the airport where it could easily be retrieved.

In the direction of Mount Overlook he could see cumulus clouds and the dark turbulence which meant strong updraft. He headed in that direction.

Except for the whistling of wind, there is complete silence in a soaring glider. Max Mainz began to call back to his superior, was taken back by the volume, and dropped his voice. He said, "Look, captain. What keeps it up?"

Joe grinned. He liked the buoyance of glider flying, the nearest approach of man to the bird, and thus far everything was going well. He told Max, "An airplane plows through the air currents, a glider rides on top of them."

"Yeah, but suppose the current is going down?"

"Then we avoid it. This sailplane only has a gliding angle ratio of one to twenty-five, but it's a workhorse with a payload of some four hundred pounds. A really high performance glider can have a ratio of as much as one to forty."

Joe had found a strong updraft where a wind ran up the side of a mountain. He banked, went into a circling turn. The gauge indicated they were climbing at the rate of eight meters per second, nearly fifteen hundred feet a minute.

Max hadn't got the rundown on the theory of the glider. That was obvious in his expression.

Joe Mauser, even while searching the ground below keenly, went into it further. "A wind up against a mountain will give an updraft, storm clouds will, even a newly plowed field in a bright sun. So you go from one of these to the next."

"Yeah, great, but when you're between," Max protested.

"Then, when you have a one to twenty-five ratio, you go twenty-five feet forward for each one you drop. If you started a mile high, you could go twenty-five miles before you touched ground." He cut himself off quickly. "Look, what's that, down there? Get your glasses on it."

Max caught his excitement. His binoculars were tight to his eyes. "Sojers. Cavalry. They sure ain't ours. They must be Hovercraft lads. And look, field artillery."

Joe Mauser was piloting with his left hand, his right smoothing out a chart on his lap. He growled, "What are they doing there? That's at least a full brigade of cavalry. Here, let me have those glasses.

With his knees gripping the stick, he went into a slow circle, as he

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stared down at the column of men. "Jack Alshuler," he whistled in surprise. "The marshal's crack heavy cavalry. And several batteries of artillery." He swung the glasses in a wider scope and the whistle turned into a hiss of comprehension. "They're doing a complete circle of the reservation. They're going to hit the Baron from the direction of Phoenecia."

X

Marshal Stonewall Cogswell directed his old fashioned telescope in the direction his chief of staff indicated.

"What is it?" he grunted.

"It's an airplane, sir."

"Over a military reservation with a fracas in progress?"

"Yes, sir." The other put his glasses back on the circling object. "Then what is it, sir. Certainly not a free balloon."

"Balloons," the marshal snorted, as though to himself. "Legal to use. The Union forces had them toward the end of the Civil War. But practically useless in a fracas of movement."

They were standing before the former resort hotel which housed the marshal's headquarters. Other staff members were streaming from the building, and one of the ever-present Telly reporting crews were hurriedly setting up cameras.

The marshal turned and barked, "Does anybody know what in Zen that confounded thing, circling up there, is?"

Baron Zwerdling, the aging Category Transport magnate, head of Continental Hovercraft, hobbled onto the wooden veranda and stared with the others. "An airplane," he croaked. "Haer's gone too far this time. Too far, too far. This will strip him. Strip him, understand." Then he added, "Why doesn't it make any noise?"

Lieutenant Colonel Paul Warren stood next to his commanding officer. "It looks like a glider, sir."

Cogswell glowered at him. "A what?"

"A glider, sir. It's a sport not particularly popular these days."

"What keeps it up, confound it?"

Paul Warren looked at him. "The same thing that keeps a hawk up, an albatross, a gull—"

"A vulture, you mean," Cogswell snarled. He watched it for another long moment, his face working. He whirled on his chief of artillery. "Jed, can you bring that thing down?"

The other had been viewing the craft through field binoculars, his face as shocked as the rest of them. Now he faced his chief, and lowered the glasses, shaking his head. "Not with the artillery of pre-1900. No, sir."

"What can you do?" Cogswell barked.

The artillery man was shaking his head. "We could mount some Maxim guns on wagon wheels, or something. Keep him from coming low."

"He doesn't have to come low," Cogswell growled unhappily. He spun on Lieutenant Colonel Warren again. "When were they invented?" He jerked his thumb upward. "Those things."

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Warren was twisting his face in memory. "Some time about the turn of the century."

"How long can the things stay up?"

Warren took in the surrounding mountainous countryside. "Indefinitely, sir. A single pilot, as long as he is physically able to operate. If there are two pilots up there to relieve each other, they could stay until food and water ran out."

"How much weight do they carry?"

"I'm not sure. One that size, certainly enough for two men and any equipment they'd need. Say, five hundred pounds."

Cogswell had his telescope glued to his eyes again, he muttered under his breath, "Five hundred pounds! They could even unload dynamite over our horses. Stampede them all over the reservation."

"What's going on?" Baron Zwerdling shrilled. "What's going on Marshal Cogswell?"

Cogswell ignored him. He watched the circling, circling craft for a full five minutes, breathing deeply. Then he lowered his glass and swept the assembled officers of his staff with an indignant glare. "Ten Eyck!" he grunted.

An infantry colonel came to attention. "Yes, sir."

Cogswell said heavily, deliberately. "Under a white flag. A dispatch to Baron Haer. My compliments and request for his terms. While you're at it, my compliments also to Captain Joseph Mauser."

Zwerdling was bug-eyeing him. "Terms!" he rasped.

The marshal turned to him. "Yes, sir. Face reality. We're in the dill. I suggest you sue for terms as short of complete capitulation as you can make them."

"You call yourself a soldier—!" the transport tycoon began to shrill.

"Yes, sir," Cogswell snapped. "A soldier, not a butcher of the lads under me." He called to the Telly reporter who was getting as much of this as he could. "Mr. Soligen, isn't it?"

The reporter scurried forward, flicking signals to his cameramen for proper coverage. "Yes, sir. Freddy Soligen, marshal. Could you tell the Telly fans what this is all about, Marshal Cogswell? Folks, you all know the famous marshal. Marshal Stonewall Cogswell, who hasn't lost a fracas in nearly ten years, now commanding the forces of Continental Hovercraft."

"I'm losing one now," Cogswell said grimly. "Vacuum Tube Transport has pulled a gimmick out of the hat and things have pickled for us. It will be debated before the Military Category Department, of course, and undoubtedly the Sov-world military attaches will have things to say. But as it appears now, the fracas as we have known it, has been revolutionized."

"Revolutionized?" Even the Telly reporter was flabbergasted. "You mean by that thing?" He pointed upward, and the lenses of the cameras followed his finger.

"Yes," Cogswell growled unhap-

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pily. "Do all of you need a blueprint? Do you think I can fight a fracas with that thing dangling above me, throughout the day hours? Do you understand the importance of reconnaissance in warfare?" His eyes glowered. "Do you think Napoleon would have lost Waterloo if he'd had the advantage of perfect reconnaissance such as that thing can deliver? Do you think Lee would have lost Gettysburg? Don't be ridiculous." He spun on Baron Zwerdling, who was stuttering his complete confusion.

"As it stands, Baron Haer knows every troop dispensation I make. All I know of his movements are from my cavalry scouts. I repeat, I am no butcher, sir. I will gladly cross swords with Baron Haer another day, when I, too, have . . . what did you call the confounded things, Paul?"

"Gliders," Lieutenant Colonel Warren said.

XI

Major Joseph Mauser, now attired in his best off-duty Category Military uniform, spoke his credentials to the receptionist. "I have no definite appointment, but I am sure the Baron will see me," he said.

"Yes, sir." The receptionist did the things that receptionists do, then looked up at him again. "Right through that door, major."

Joe Mauser gave the door a quick double rap and then entered before waiting an answer.

Balt Haer, in mufti, was standing at a far window, a drink in his hand, rather than his customary swagger stick. Nadine Haer sat in an easy-chair. The girl Joe Mauser loved had been crying.

Joe Mauser, suppressing his frown, made with the usual amenities.

Balt Haer without answering them, finished his drink in a gulp and stared at the newcomer. The old stare, the aloof stare, an aristocrat looking at an underling as though wondering what made the fellow tick. He said, finally, "I see you have been raised to Rank Major."

"Yes, sir," Joe said.

"We are obviously occupied, major. What can either my sister or I possibly do for you?"

Joe kept his voice even. He said, "I wanted to see the Baron."

Nadine Haer looked up, a twinge of pain crossing her face.

"Indeed," Balt Haer said flatly. "You are talking to the Baron, Major Mauser."

Joe Mauser looked at him, then at his sister, who had taken to her handkerchief again. Consternation ebbed up and over him in a flood. He wanted to say something such as, "Oh *no*," but not even that could he utter.

Haer was bitter. "I assume I know why you are here, major. You have come for your pound of flesh, undoubtedly. Even in these hours of our grief—"

"I . . . I didn't know. Please believe . . ."

". . . You are so constituted that your ambition has no decency. Well,

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Major Mauser, I can only say that your arrangement was with my father. Even if I thought it a reasonable one, I doubt if I would sponsor your ambitions myself."

Nadine Haer looked up wearily. "Oh, Balt, come off it," she said. "The fact is, the Haer fortunes contracted a debt to you, major. Unfortunately, it is a debt we cannot pay." She looked into his face. "First, my father's governmental connections do not apply to us. Second, six months ago, my father, worried about his health and attempting to avoid certain death taxes, transferred the family stocks into Balt's name. And Balt saw fit, immediately before the fracas, to sell all Vacuum Tube Transport stocks, and invest in Hovercraft."

"That's enough, Nadine," her brother snapped nastily.

"I see," Joe said. He came to attention. "Dr. Haer, my apologies for intruding upon you in your time of bereavement." He turned to the new Baron. "Baron Haer, my apologies for *your* bereavement."

Balt Haer glowered at him.

Joe Mauser turned and marched for the door which he opened then closed behind him.

On the street, before the New York offices of Vacuum Tube Transport, he turned and for a moment looked up at the splendor of the building.

Well, at least the common shares of the concern had skyrocketed following the victory. His rank had been upped to Major, and old Stonewall Cogswell had offered him a permanent position on his staff in command of aerial operations, no small matter of prestige. The difficulty was, he wasn't interested in the added money that would accrue to him, nor the higher rank—nor the prestige, for that matter.

He turned to go to his hotel.

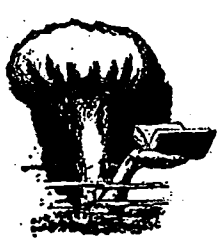
An unbelievably beautiful girl came down the steps of the building. She said, "Joe."

He looked at her. "Yes?"

She put a hand on his sleeve. "Let's go somewhere and talk, Joe."

"About what?" He was infinitely weary now.

"About goals," she said. "As long as they exist, whether for individuals, or nations, or a whole species, life is still worth the living. Things are a bit bogged down right now, but at the risk of sounding very trite, there's tomorrow." ■



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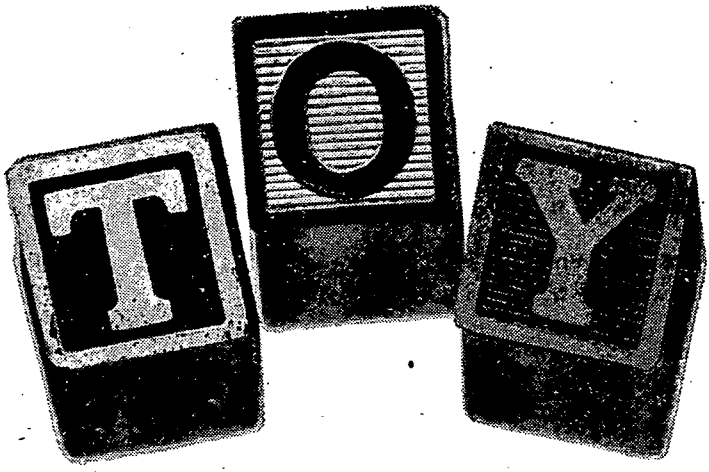
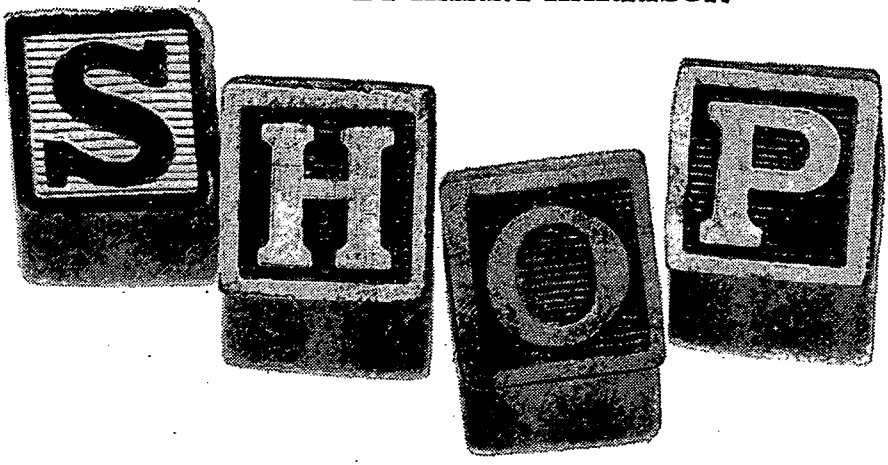


The gadget was strictly,
beyond any question, a toy.
Not a real, workable device.
Except for the way it could work
under a man's mental skin...

BY HARRY HARRISON



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■ Because there were few adults in the crowd, and Colonel "Biff" Hawton stood over six feet tall, he could see every detail of the demonstration. The children—and most of the parents—gaped in wide-eyed wonder. Biff Hawton was too sophisticated to be awed. He stayed on because he wanted to find out what the trick was that made the gadget work.

"It's all explained right here in your instruction book," the demonstrator said, holding up a garishly printed booklet opened to a four-color diagram. "You all know how magnets pick up things and I bet you even know that the earth itself is one great big magnet—that's why compasses always point north. Well . . . the Atomic Wonder Space Wave Tapper hangs onto those space waves. Invisibly all about us, and even going right through us, are the magnetic waves of the earth. The Atomic Wonder rides these waves just the way a ship rides the waves in the ocean. Now watch . . ."

Every eye was on him as he put the gaudy model rocketship on top of the table and stepped back. It was made of stamped metal and seemed as incapable of flying as a can of ham—which it very much resembled. Neither wings, propellors, nor jets broke through the painted surface. It rested on three rubber wheels and coming out through the bottom was a double strand of thin insulated wire. This white wire ran across the top of the black table and terminated in a control box in the demonstrator's hand. An indicator light, a switch and a

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knob appeared to be the only controls.

"I turn on the Power Switch, sending a surge of current to the Wave Receptors," he said. The switch clicked and the light blinked on and off with a steady pulse. Then the man began to slowly turn the knob. "A careful touch on the Wave Generator is necessary as we are dealing with the powers of the whole world here . . ."

A concerted *ahhhh* swept through the crowd as the Space Wave Tapper shivered a bit, then rose slowly into the air. The demonstrator stepped back and the toy rose higher and higher, bobbing gently on the invisible waves of magnetic force that supported it. Ever so slowly the power was reduced and it settled back to the table.

"Only $17.95," the young man said, putting a large price sign on the table. "For the complete set of the Atomic Wonder, the Space Tapper control box, battery and instruction book . . ."

At the appearance of the price card the crowd broke up noisily and the children rushed away towards the operating model trains. The demonstrator's words were lost in their noisy passage, and after a moment he sank into a gloomy silence. He put the control box down, yawned and sat on the edge of the table. Colonel Hawton was the only one left after the crowd had moved on.

"Could you tell me how this thing works?" the colonel asked, coming forward. The demonstrator brightened up and picked up one of the toys.

"Well, if you will look here, sir . . ." He opened the hinged top, "You will see the Space Wave coils at each end of the ship." With a pencil he pointed out the odd shaped plastic forms about an inch in diameter that had been wound—apparently at random—with a few turns of copper wire. Except for these coils the interior of the model was empty. The coils were wired together and other wires ran out through the hole in the bottom of the control box. Biff Hawton turned a very quizzical eye on the gadget and upon the demonstrator who completely ignored this sign of disbelief.

"Inside the control box is the battery," the young man said, snapping it open and pointing to an ordinary flashlight battery. "The current goes through the Power Switch and Power Light to the Wave Generator . . ."

"What you mean to say," Biff broke in, "is that the juice from this fifteen cent battery goes through this cheap rheostat to those meaningless coils in the model and absolutely nothing happens. Now tell me what really flies the thing. If I'm going to drop eighteen bucks for six-bits worth of tin, I want to know what I'm getting."

The demonstrator flushed. "I'm sorry sir," he stammered. "I wasn't trying to hide anything. Like any magic trick this one can't be really demonstrated until it has been purchased." He leaned forward and whispered confidentially. "I'll tell you

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what I'll do though. This thing is way overpriced and hasn't been moving at all. The manager said I could let them go at three dollars if I could find any takers. If you want to buy it for that price . . ."

"Sold, my boy!" the colonel said, slamming three bills down on the table. "I'll give that much for it no matter *how* it works. The boys in the shop will get a kick out of it," he tapped the winged rocket on his chest. "Now *really*—what holds it up?"

The demonstrator looked around carefully, then pointed. "Strings!" he said. "Or rather a black thread. It runs from the top of the model, through a tiny loop in the ceiling, and back down to my hand—tied to this ring on my finger. When I back up—the model rises. It's as simple as that."

"All good illusions are simple," the colonel grunted, tracing the black thread with his eye. "As long as there is plenty of flimflam to distract the viewer."

"If you don't have a black table, a black cloth will do," the young man said. "And the arch of a doorway is a good site, just see that the room in back is dark."

"Wrap it up my boy, I wasn't born yesterday. I'm an old hand at this kind of thing."

Biff Hawton sprang it at the next Thursday-night poker party. The gang were all missile men and they cheered and jeered as he hammed up the introduction.

"Let me copy the diagram Biff, I could use some of those magnetic waves in the new bird!"

"Those flashlight batteries are cheaper than lox, this is the thing of the future!"

Only Teddy Kaner caught wise as the flight began. He was an amateur magician and spotted the gimmick at once. He kept silent with professional courtesy, and smiled ironically as the rest of the bunch grew silent one by one. The colonel was a good showman and he had set the scene well. He almost had them believing in the Space Wave Tapper before he was through. When the model had landed and he had switched it off he couldn't stop them from crowding around the table.

"A thread!" one of the engineers shouted, almost with relief, and they all laughed along with him.

"Too bad," the head project physicist said, "I was hoping that a little Space Wave Tapping could help us out. Let me try a flight with it."

"Teddy Kaner first," Biff announced. "He spotted it while you were all watching the flashing lights, only he didn't say anything."

Kaner slipped the ring with the black thread over his finger and started to step back.

"You have to turn the switch on first," Biff said.

"I know," Kaner smiled. "But that's part of illusion—the spiel and the misdirection. I'm going to try this cold first, so I can get it moving up and down smoothly, then go through it with the whole works.

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ILLUSTRATED BY BREY

He moved his hand back smoothly, in a professional manner that drew no attention to it. The model lifted from the table—then crashed back down.

"The thread broke," Kaner said.

"You jerked it, instead of pulling smoothly," Biff said and knotted the broken thread. "Here let me show you how to do it."

The thread broke again when Biff tried it, which got a good laugh that made his collar a little warm. Someone mentioned the poker game.

This was the only time that poker was mentioned or even remembered that night. Because very soon after this they found that the thread would lift the model only when the switch was on and two and a half volts flowing through the joke coils. With the current turned off the model was too heavy to lift. The thread broke every time.

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"I still think it's a screwy idea," the young man said. "One week getting fallen arches, demonstrating those toy ships for every brat within a thousand miles. Then selling the things for three bucks when they must have cost at least a hundred dollars apiece to make."

"But you *did* sell the ten of them to people who would be interested?" the older man asked.

"I think so, I caught a few Air Force officers and a colonel in missiles one day. Then there was one official I remembered from the Bureau of Standards. Luckily he didn't recognize me. Then those two professors you spotted from the university."

"Then the problem is out of our hands and into theirs. All we have to do now is sit back and wait for results."

"*What* results?! These people weren't interested when we were hammering on their doors with the proof. We've patented the coils and can prove to anyone that there is a reduction in weight around them when they are operating . . ."

"But a small reduction. And we don't know what is causing it. No one can be interested in a thing like that—a fractional weight decrease in a clumsy model, certainly not enough to lift the weight of the generator. No one wrapped up in massive fuel consumption, tons of lift and such is going to have time to worry about a crackpot who thinks he has found a minor slip in Newton's laws."

"You think they will now?" the young man asked, cracking his knuckles impatiently.

"I *know* they will. The tensile strength of that thread is correctly adjusted to the weight of the model. The thread will break if you try to lift the model with it. Yet you can lift the model—after a small increment of its weight has been removed by the coils. This is going to bug these men. Nobody is going to ask them to solve the problem or concern themselves with it. But it will nag at them because they know this effect can't possibly exist. They'll see at once that the magnetic-wave theory is nonsense. Or perhaps true? We don't know. But they will all be thinking about it and worrying about it. Someone is going to experiment in his basement—just as a hobby of course—to find the cause of the error. And he or someone else is going to find out what makes those coils work, or maybe a way to improve them!"

"And we have the patents . . ."

"Correct. They will be doing the research that will take them out of the massive-lift-propulsion business and into the field of pure space flight."

"And in doing so they will be making us rich—whenever the time comes to manufacture," the young man said cynically.

"We'll all be rich son," the older man said, patting him on the shoulder. "Believe me, you're not going to recognize this old world ten years from now." ■

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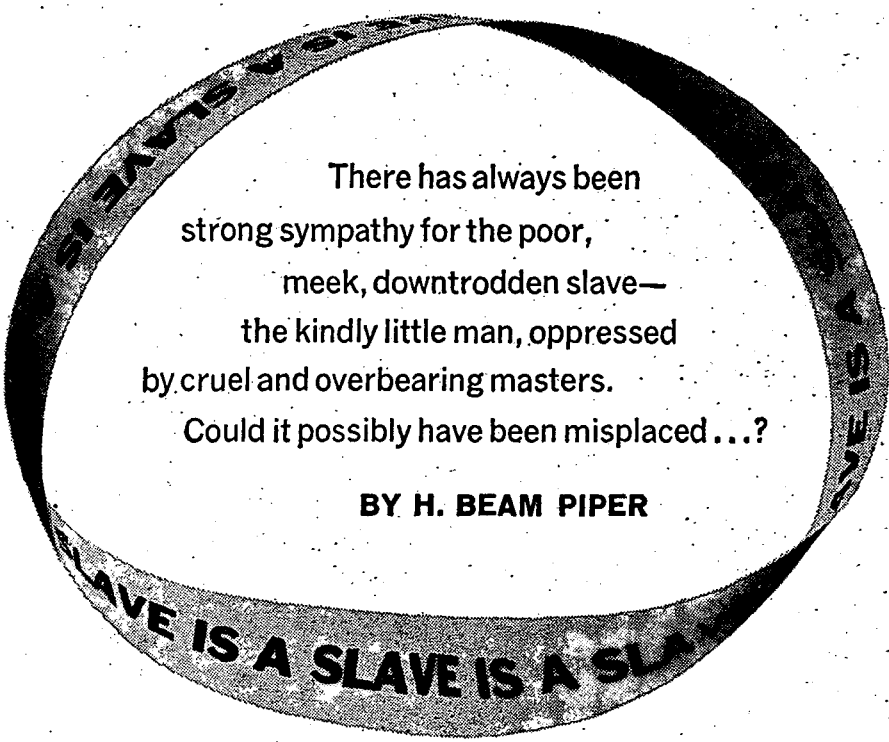

There has always been
strong sympathy for the poor,
meek, downtrodden slave—
the kindly little man, oppressed
by cruel and overbearing masters.
Could it possibly have been misplaced . . . ?

BY H. BEAM PIPER

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■ Jurgen, Prince Trevannion, accepted the coffee cup and lifted it to his lips, then lowered it. These Navy robots always poured coffee too hot; spacemen must have collapsium-lined throats. With the other hand, he punched a button on the robot's keyboard and received a lighted cigarette; turning, he placed the cup on the command-desk in front of him and looked about. The tension was relaxing in Battle-Control, the purposeful pandemonium of the last three hours dying rapidly. Officers of both sexes, in red and blue and yellow and green coveralls, were rising from seats, leaving their stations, gathering in groups. Laughter, a trifle loud; he realized, suddenly, that they had been worried, and wondered if he should not have been a little so himself. No. There would have been nothing he could have done about anything, so worry would not have been useful. He lifted the cup again and sipped cautiously.

"That's everything we can do now," the man beside him said. "Now we just sit and wait for the next move."

Like all the others, Line-Commodore Vann Shatrak wore shipboard battle-dress; his coveralls were black, splashed on breast and between shoulders with the gold insignia of his rank. His head was completely bald, and almost spherical; a beaklike nose carried down the curve of his brow, and the straight lines of mouth and chin chopped under it enhanced rather than spoiled the effect. He was getting coffee; he gulped it at once.

"It was very smart work, Commodore. I never saw a landing operation go so smoothly."

"Too smooth," Shatrak said. "I don't trust it." He looked suspiciously up at the row of viewscreens.

"It was absolutely unnecessary!"

That was young Obray, Count Erskyll, seated on the commodore's left. He was a generation younger than Prince Trevannion, as Shatrak was a generation older; they were both smooth-faced. It was odd, how beards went in and out of fashion with alternate generations. He had been worried, too, during the landing, but for a different reason from the others. Now he was reacting with anger.

"I told you, from the first, that it was unnecessary. You see? They weren't even able to defend themselves, let alone . . ."

His personal communication-screen buzzed; he set down the coffee and flicked the switch. It was Lanze Degbrend. On the books, Lanze was carried as Assistant to the Ministerial Secretary. In practice, Lanze was his chess-opponent, conversational foil, right hand, third eye and ear, and, sometimes, trigger-finger. Lanze was now wearing the combat coveralls of an officer of Navy Landing-Troops; he had a steel helmet with a transpex visor shoved up, and there was a carbine slung over his shoulder. He grinned and executed an exaggeratedly military salute. He chuckled.

"Well, look at you; aren't you the perfect picture of correct diplomatic dress?"

"You know, sir, I'm afraid I am, for this planet," Degbrend said. "Colonel

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Ravney insisted on it. He says the situation downstairs is still fluid, which I take to mean that everybody is shooting at everybody. He says he has the main telecast station, in the big building the locals call the Citadel."

"Oh, good. Get our announcement out as quickly as you can. Number Five. You and Colonel Ravney can decide what interpolations are needed to fit the situation."

"Number Five; the really tough one," Degbrend considered. "I take it that by interpolations you do not mean dilutions?"

"Oh, no; don't water the drink. Spike it."

Lanze Degbrend grinned at him. Then he snapped down the visor of his helmet, unslung his carbine, and presented it. He was still standing at present arms when Trevannion blanked the screen.

"That still doesn't excuse a wanton and unprovoked aggression!" Erskyll was telling Shatrak, his thin face flushed and his voice quivering with indignation. "We came here to help these people, not to murder them."

"We didn't come here to do either, Obray," he said, turning to face the younger man. "We came here to annex their planet to the Galactic Empire, whether they wish it annexed or not. Commodore Shatrak used the quickest and most effective method of doing that. It would have done no good to attempt to parley with them from off-planet. You heard those telecasts of theirs."

"Authoritarian," Shatrak said, then mimicked pompously: " 'Everybody is commanded to remain calm; the Mastership is taking action. The Convocation of the Lords-Master is in special session; they will decide how to deal with the invaders. The administrators are directed to reassure the supervisors; the overseers will keep the workers at their tasks. Any person disobeying the orders of the Mastership will be dealt with most severely.' "

"Static, too. No spaceships into this system for the last five hundred years; the Convocation—equals Parliament, I assume—hasn't been in special session for two hundred and fifty."

"Yes. I've taken over planets with that kind of government before," Shatrak said. "You can't argue with them. You just grab them by the center of authority, quick and hard."

Count Erskyll said nothing for a moment. He was opposed to the use of force. Force, he believed, was the last resort of incompetence; he had said so frequently enough since this operation had begun. Of course, he was absolutely right, though not in the way he meant. Only the incompetent wait until the last extremity to use force, and by then, it is usually too late to use anything, even prayer.

But, at the same time, he was opposed to authoritarianism, except, of course, when necessary for the real good of the people. And he did not like rulers who called themselves Lords-Master. Good democratic rulers called themselves Servants of the People. So he relapsed into silence

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and stared at the viewscreens.

One, from an outside pickup on the *Empress Eulalie* herself, showed the surface of the planet, a hundred miles down, the continent under them curving away to a distant sun-reflecting sea; beyond the curved horizon, the black sky was spangled with unwinking stars. Fifty miles down, the sun glinted from the three thousand foot globes of the two transport-cruisers, *Canopus* and *Mizar*.

Another screen, from *Mizar*, gave a clearer if more circumscribed view of the surface—green countryside, veined by rivers and wrinkled with mountains; little towns that were mere dots; a scatter of white clouds. Nothing that looked like roads. There had been no native sapient race on this planet, and in the thirteen centuries since it had been colonized the Terrohuman population had never completely lost the use of contragravity vehicles. In that screen, farther down, the four destroyers, *Irma, Irene, Isobel* and *Iris*, were tiny twinkles.

From *Irene*, they had a magnified view of the city. On the maps, none later than eight hundred years old, it was called Zeggensburg; it had been built at the time of the first colonization under the old Terran Federation. Tall buildings, rising from wide interspaces of lawns and parks and gardens, and, at the very center, widely separated from anything else, the mass of the Citadel, a huge cylindrical tower rising from a cluster of smaller cylinders, with a broad circular landing stage above, topped by the newly raised flag of the Galactic Empire.

There was a second city, a thick crescent, to the south and east. The old maps placed the Zeggensburg spaceport there, but not a trace of that remained. In its place was what was evidently an industrial district, located where the prevailing winds would carry away the dust and smoke. There was quite a bit of both, but the surprising thing was the streets, long curved ones, and shorter ones crossing at regular intervals to form blocks. He had never seen a city with streets before, and he doubted if anybody else on the Empire ships had. Long boulevards to give unobstructed passage to low-level air-traffic, of course, and short winding walkways, but not things like these. Pictures, of course, of native cities on planets colonized at the time of the Federation, and even very ancient ones of cities on pre-Atomic Terra. But these people had contragravity; the towering, wide-spaced city beside this cross-gridded anachronism proved that.

They knew so little about this planet which they had come to bring under Imperial rule. It had been colonized thirteen centuries ago, during the last burst of expansion before the System States War and the disintegration of the Terran Federation, and it had been named Aditya, in the fashion of the times, for some forgotten deity of some obscure and ancient polytheism. A century or so later, it had seceded from or been abandoned by the Federation, then breaking up. That much they had gleaned from old

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Federation records still existing on Baldur. After that, darkness, lighted only by a brief flicker when more records had turned up on Morglay.

Morglay was one of the Sword-Worlds, settled by refugee rebels from the System States planets. Mostly they had been soldiers and spacemen; there had been many women with them, and many were skilled technicians, engineers, scientists. They had managed to carry off considerable equipment with them, and for three centuries they had lived in isolation, spreading over a dozen hitherto undiscovered planets. Excalibur, Tizona, Gram, Morglay, Durendal, Flamberge, Curtana, Quernbiter; the names were a roll-call of fabulous blades of Old Terran legend.

Then they had erupted, suddenly and calamitously, into what was left of the Terran Federation as the Space Vikings, carrying pillage and destruction, until the newborn Empire rose to vanquish them. In the sixth Century Pre-Empire, one of their fleets had come from Morglay to Aditya.

The Adityans of that time had been near-barbarians; the descendants of the original settlers had been serfs of other barbarians who had come as mercenaries in the service of one or another of the local chieftains and had remained to loot and rule. Subjugating them had been easy; the Space Vikings had taken Aditya and made it their home. For several centuries, there had been communication between them and their home planet. Then Morglay had become involved in one of the interplanetary dynastic wars that had begun the decadence of the Space Vikings, and again Aditya dropped out of history.

Until this morning, when history returned in the black ships of the Galactic Empire.

He stubbed out the cigarette and summoned the robot to give him another. Shatrak was speaking:

"You see, Count Erskyll, we really had to do it this way, for their own good." He wouldn't have credited the commodore with such guile; anything was justified, according to Obray of Erskyll, if done for somebody else's good. "What we did, we just landed suddenly, knocked out their army, seized the center of government, before anybody could do anything. If we'd landed the way you'd wanted us to, somebody would have resisted, and the next thing, we'd have had to kill about five or six thousand of them and blow down a couple of towns, and we'd have lost a lot of our own people doing it. You might say, we had to do it to save them from themselves."

Obray of Erskyll seemed to have doubts, but before he could articulate them, Shatrak's communication-screen was calling attention to itself. The commodore flicked the switch, and his executive officer, Captain Patrique Morvill, appeared in it.

"We've just gotten reports, sir, that some of Ravney's people have captured a half-dozen missile-launching sites around the city. His air-reconn tells him that that's the lot of them. I have an officer of one of the parties that participated. You ought

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to hear what he has to say, sir."

"Well, good!" Vann Shatrak whooshed out his breath. "I don't mind admitting, I was a little on edge about that."

"Wait till you hear what Lieutenant Carmath has to say." Morvill seemed to be strangling a laugh. "Ready for him, Commodore?"

Shatrak nodded; Morvill made a hand-signal and vanished in a flicker of rainbow colors; when the screen cleared, a young Landing-Troop lieutenant in battle-dress was looking out of it. He saluted and gave his name, rank and unit.

"This missile-launching site I'm occupying, sir; it's twenty miles north-west of the city. We took it thirty minutes ago; no resistance whatever. There are four hundred or so people here. Of them, twelve, one dozen, are soldiers. The rest are civilians. Ten enlisted men, a non-com of some sort, and something that appears to be an officer. The officer had a pistol, fully loaded. The non-com had a submachine gun, empty, with two loaded clips on his belt. The privates had rifles, empty, and no ammunition. The officer did not know where the rifle ammunition was stored."

Shatrak swore. The second lieutenant nodded. "Exactly my comment when he told me, sir. But this place is beautifully kept up. Lawns all mowed, trees neatly pruned, everything policed up like inspection morning. And there is a headquarters office building here adequate for an Army division . . ."

"How about the armament, Lieutenant?" Shatrak asked with forced patience.

"Ah, yes; the armament, sir. There are eight big launching cradles for panplanetary or off-planet missiles. They are all polished up like the Crown Jewels. But none, repeat none, of them is operative. And there is not a single missile on the installation."

Shatrak's facial control didn't slip. It merely intensified, which amounted to the same thing.

"Lieutenant Carmath, I am morally certain I heard you correctly, but let's just check. You said . . ."

He repeated the lieutenant back, almost word for word. Carmath nodded.

"That was it, sir. The missile-crypts are stacked full of old photoprints and recording and microfilm spools. The sighting-and-guidance systems for all the launchers are completely missing. The letoff mechanisms all lack major parts. There is an elaborate set of detection equipment, which will detect absolutely nothing. I saw a few pairs of binoculars about; I suspect that that is what we were first observed with."

"This office, now; I suppose all the paperwork is up to the minute in quintulplicate, and initialed by everybody within sight or hearing?"

"I haven't checked on that yet, sir. If you're thinking of betting on it, please don't expect me to cover you, though."

"Well, thank you, Lieutenant Carmath. Stick around; I'm sending down a tech-intelligence crew to look

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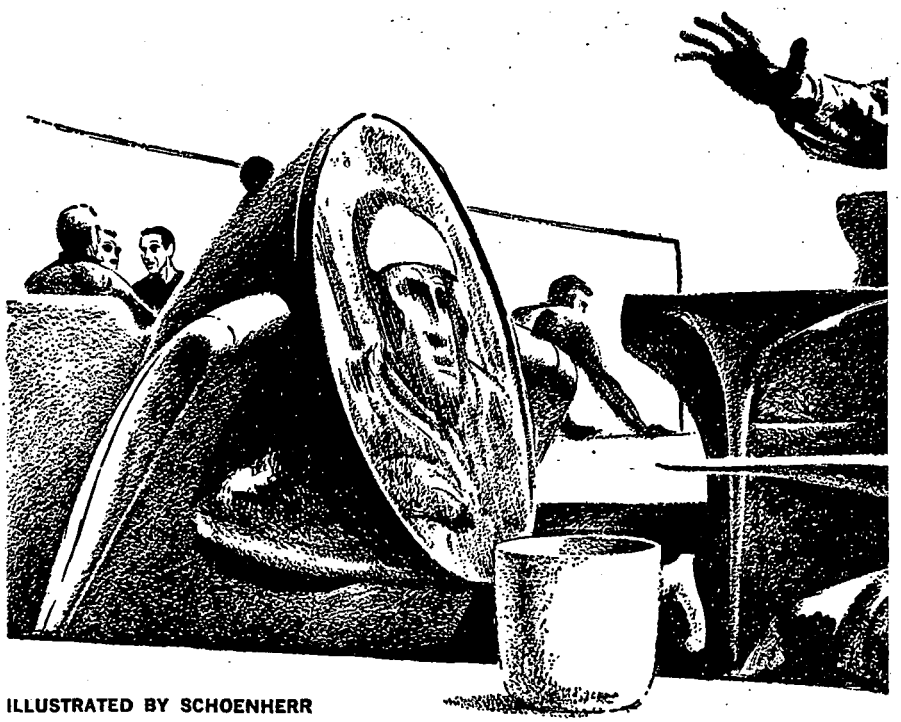
at what's left of the place. While you're waiting, you might sort out whoever seems to be in charge and find out just what in Nifflheim he thinks that launching-station was maintained for."

"I think I can tell you that, now, Commodore," Prince Trevannion said, as Shatrak blanked the screen. "We have a petrified authoritarianism. Quite likely some sort of an oligarchy; I'd guess that this Convocation thing they talk about consists of all the ruling class, everybody has equal voice, and nobody will take the responsibility for doing anything. And the actual work of government is



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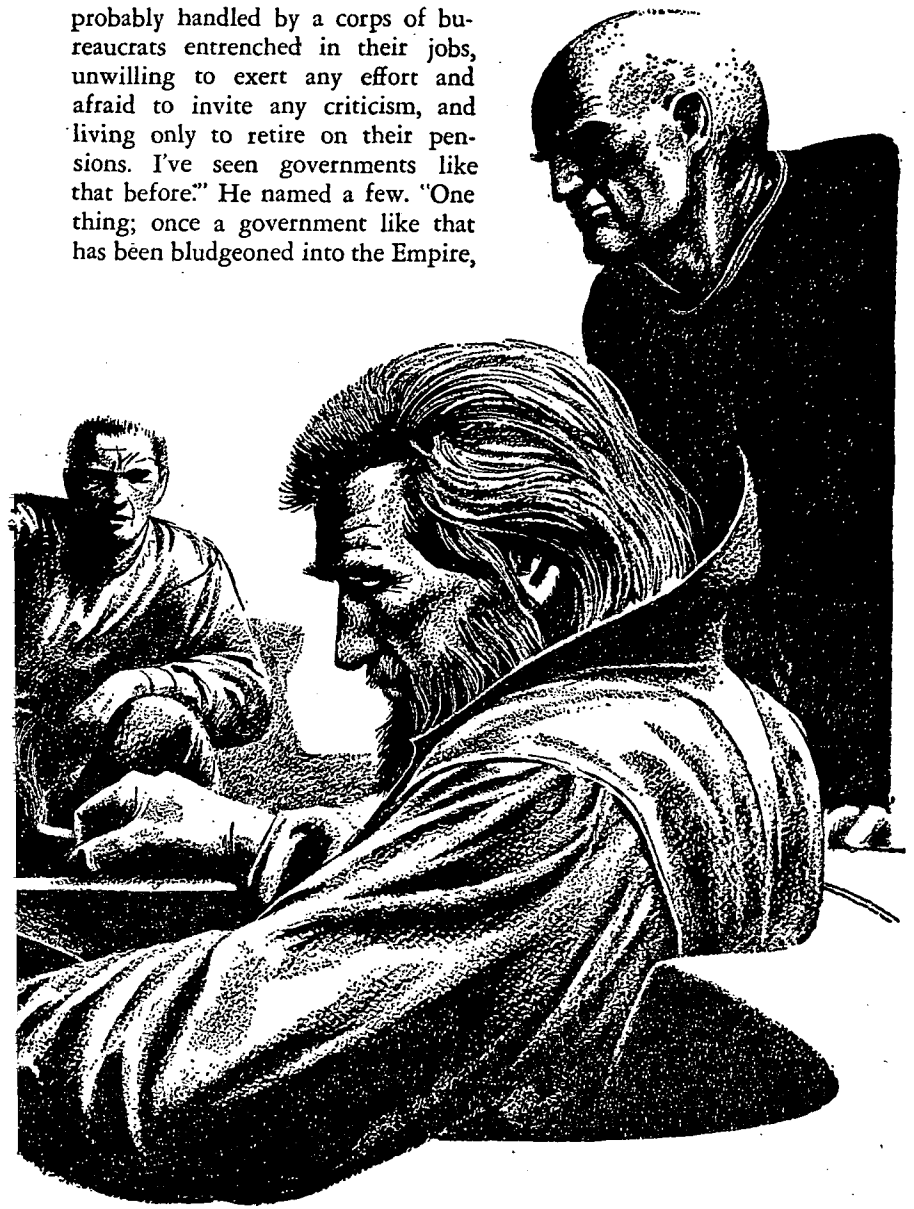
probably handled by a corps of bureaucrats entrenched in their jobs, unwilling to exert any effort and afraid to invite any criticism, and living only to retire on their pensions. I've seen governments like that before." He named a few. "One thing; once a government like that has been bludgeoned into the Empire,



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it rarely makes any trouble later."

"Just to judge by this missileless non-launching station," Shatrak said, "they couldn't even decide on what kind of trouble to make, or how to start it. I think you're going to have a nice easy Proconsulate here, Count Erskyll."

Count Erskyll started to say something. No doubt he was about to tell Shatrak, cuttingly, that he didn't want an easy Proconsulate, but an opportunity to help these people. He was saved from this by the buzzing of Shatrak's communication-screen.

It was Colonel Pyairr Ravney, the Navy Landing-Troop commander. Like everybody else who had gone down to Zeggensburg, he was in battle-dress and armed; the transpex visor of his helmet was pushed up. Between Shatrak's generation and Count Erskyll's, he sported a pointed mustache and a spiky chin-beard, which, on his thin and dark-eyed face, looked distinctly Mephistophelean. He was grinning.

"Well, sir, I think we can call it a done job," he said. "There's a delegation here who want to talk to the Lords-Master of the ships on behalf of the Lords-Master of the Convocation. Two of them, with about a dozen portfolio-bearers and note-takers. I'm not too good in Lingua Terra, outside Basic, at best, and their brand is far from that. I gather that they're some kind of civil-servants, personal representatives of the top Lords-Master."

"Do we want to talk to them?" Shatrak asked.

"Well, we should only talk to the actual, titular, heads of the government—Mastership," Erskyll, suddenly protocol-conscious, objected. "We can't negotiate with subordinates."

"Oh, who's talking about negotiating; there isn't anything to negotiate. Aditya is now a part of the Galactic Empire. If this present regime assents to that, they can stay in power. If not, we will toss them out and install a new government. We will receive this delegation, inform them to that effect, and send them back to relay the information to their Lords-Master." He turned to the Commodore. "May I speak to Colonel Ravney?"

Shatrak assented. He asked Ravney where these Lords-Master were.

"Here in the Citadel, in what they call the Convocation Chamber. Close to a thousand of them, screaming recriminations at one another. Sounds like feeding time at the Imperial Zoo. I think they all want to surrender, but nobody dares propose it first. I've just put a cordon around it and placed it off limits to everybody. And everything outside off limits to the Convocation."

"Well thought of, Colonel. I suppose the Citadel teems with bureaucrats and such low life-forms?"

"Bulging with them. Literally thousands. Lanze Degbrend and Commander Douvrin and a few others are trying to get some sensible answers out of some of them."

"This delegation; how had you thought of sending them up?"

"Landing-craft to *Isobel; Isobel*

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will bring them the rest of the way."

He looked at his watch. "Well, don't be in too much of a rush to get them here, Colonel. We don't want them till after lunch. Delay them on *Isobel;* the skipper can see that they have their own lunch aboard. And entertain them with some educational films. Something to convince them that there is slightly more to the Empire than one ship-of-the-line, two cruisers and four destroyers."

Count Erskyll was dissatisfied about that, too. He wanted to see the delegation at once and make arrangements to talk to their superiors. Count Erskyll, among other things, was zealous, and of this he disapproved. Zealous statesmen perhaps did more mischief than anything in the Galaxy—with the possible exception of procrastinating soldiers. That could indicate the fundamental difference between statecraft and war. He'd have to play with that idea a little.

An Empire ship-of-the-line was almost a mile in diameter. It was more than a battle-craft; it also had political functions. The grand salon, on the outer zone where the curvature of the floors was less disconcerting, was as magnificent as any but a few of the rooms of the Imperial Palace at Asgard on Odin, the floor richly carpeted and the walls alternating mirrors and paintings. The movable furniture varied according to occasion; at present, it consisted of the bare desk at which they sat, the three chairs they occupied, and the three secretary-robots, their rectangular black cases blazened with the Sun and Cogwheel of the Empire. It faced the door, at the far end of the room; on either side, a rank of spacemen, in dress uniform and under arms, stood.

In principle, annexing a planet to the Empire was simplicity itself, but like so many things simple in principle, it was apt to be complicated in practice, and to this, he suspected, the present instance would be no exception.

In principle, one simply informed the planetary government that it was now subject to the sovereignty of his Imperial Majesty, the Galactic Emperor. This information was always conveyed by a Ministerial Secretary, directly under the Prime Minister and only one more step down from the Emperor, in the present instance Jurgen, Prince Trevannion. To make sure that the announcement carried conviction, the presumedly glad tidings were accompanied by the Imperial Space Navy, at present represented by Commodore Vann Shatrak and a seven ship battle-line unit, and two thousand Imperial Landing-Troops.

When the locals had been properly convinced—with as little bloodshed as necessary, but always beyond any dispute—an Imperial Proconsul, in this case Obray, Count Erskyll, would be installed. He would by no means govern the planet. The Imperial Constitution was definite on that point; every planetary government should be sovereign as to intraplanetary affairs. The Proconsul, within certain narrow and entirely inelastic limits,

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would merely govern the government.

Unfortunately, Obray, Count Erskyll, appeared not to understand this completely. It was his impression that he was a torch-bearer of Imperial civilization, or something equally picturesque and metaphorical. As he conceived it, it was the duty of the Empire, as represented by himself, to make over backward planets like Aditya in the image of Odin or Marduk or Osiris or Baldur or, preferably, his own home world of Aton.

This was Obray of Erskyll's first proconsular appointment, it was due to family influence, and it was a mistake. Mistakes, of course, were inevitable in anything as large and complex as the Galactic Empire, and any institution guided by men was subject to one kind of influence or another, family influence being no worse than any other kind. In this case, the ultra-conservative Erskylls of Aton, from old Errol, Duke of Yorvoy, down, had become alarmed at the political radicalism of young Obray, and had, on his graduation from the University of Nefertiti, persuaded the Prime Minister to appoint him to a Proconsulate as far from Aton as possible, where he would not embarrass them. Just at that time, more important matters having been gotten out of the way, Aditya had come up for annexation, and Obray of Erskyll had been named Proconsul.

That had been the mistake. He should have been sent to some planet which had been under Imperial rule for some time, where the Proconsulate ran itself in a well-worn groove, and where he could at leisure learn the procedures and unlearn some of the unrealisms absorbed at the University from professors too well insulated from the realities of politics.

There was a stir among the guards; helmet-visors were being snapped down; feet scuffed. They stiffened to attention, the great doors at the other end of the grand salon slid open, and the guards presented arms as the Adityan delegation was ushered in.

There were fourteen of them. They all wore ankle-length gowns, and they all had shaven heads. The one in the lead carried a staff and wore a pale green gown; he was apparently a herald. Behind him came two in white gowns, their empty hands folded on their breasts; one was a huge bulk of obesity with a bulging brow, protuberant eyes and a pursey little mouth, and the other was thin and cadaverous, with a skull-like, almost fleshless face. The ones behind, in dark green and pale blue, carried portfolios and slung sound-recorder cases. There was a metallic twinkle at each throat; as they approached, he could see that they all wore large silver gorgets. They came to a halt twenty feet from the desk. The herald raised his staff.

"I present the Admirable and Trusty Tchall Hozhet, personal chief-slave of the Lord-Master Olvir Nikkolon, Chairman of the Presidium of the Lords-Master's Convocation, and Khreggor Chmidd, chief-slave in office to the Lord-Master Rovard Java-

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san, Chief of Administration of Management of the Mastership," he said. Then he stopped, puzzled, looking from one to another of them. When his eyes fell on Vann Shatrak, he brightened.

"Are you," he asked, "the chief-slave of the chief Lord-Master of this ship?"

Shatrak's face turned pink; the pink darkened to red. He used a word; it was a completely unprintable word. So, except for a few scattered pronouns, conjunctions and prepositions, were the next fifty words he used. The herald stiffened. The two delegates behind him were aghast. The subordinate burden-bearers in the rear began looking around apprehensively.

"I," Shatrak finally managed, "am an officer of his Imperial Majesty's Space Navy. I am in command of this battle-line unit. I am *not*,"—he reverted briefly to obscenity—"a slave."

"You mean, you are a Lord-Master, too?" That seemed to horrify the herald even more that the things Shatrak had been calling him. "Forgive me, Lord-Master. I did not think . . ."

"That's right; you didn't," Shatrak agreed. "And don't call me Lord-Master again, or I'll . . ."

"Just a moment, Commodore." He waved the herald aside and addressed the two in white gowns, shifting to Lingua Terra. "This is a ship of the Galactic Empire," he told them. "In the Empire, there are no slaves. Can you understand that?"

Evidently not. The huge one, Khreggor Chmidd, turned to the skull-faced Tchall Hozhet, saying: "Then they must all be Lords-Master." He saw the objection to that at once. "But how can one be a Lord-Master if there are no slaves?"

The horror was not all on the visitors' side of the desk, either. Obray of Erskyll was staring at the delegation and saying, "Slaves!" under his breath. Obray of Erskyll had never, in his not-too-long life, seen a slave before.

"They can't be," Tchall Hozhet replied. "A Lord-Master is one who owns slaves." He gave that a moment's consideration. "But if they aren't Lords-Master, they must be slaves, and . . ." No. That wouldn't do, either. "But a slave is one who belongs to a Lord-Master."

Rule of the Excluded Third; evidently Pre-Atomic formal logic had crept back to Aditya. Chmidd, looking around, saw the ranks of spacemen on either side, now at parade-rest.

"But aren't they slaves?" he asked.

"They are spacemen of the Imperial Navy," Shatrak roared. "Call one a slave to his face and you'll get a rifle-butt in yours. And I shan't lift a finger to stop it." He glared at Chmidd and Hozhet. "Who had the infernal impudence to send slaves to deal with the Empire? He needs to be taught a lesson."

"Why, I was sent by the Lord-Master Olvir Nikkolon, and . . ."

"Tchall!" Chmidd hissed at him. "We cannot speak to Lords-Master.

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We must speak to their chief-slaves."

"But they have no slaves," Hozhet objected. "Didn't you hear the . . . the one with the small beard . . . say so?"

"But that's ridiculous, Khreggor. Who does the work, and who tells them what to do? Who told these people to come here?"

"Our Emperor sent us. That is his picture, behind me. But we are not his slaves. He is merely the chief man among us. Do your Masters not have one among them who is chief?"

"That's right," Chmidd said to Hozhet. "In the Convocation, your Lord-Master is chief, and in the Mastership, my Lord-Master, Rovard Javasan, is chief."

"But they don't tell the other Lords-Master what to do. In Convocation, the other Lords-Master tell them . . ."

"That's what I meant about an oligarchy," he whispered, in Imperial, to Erskyll.

"Suppose we tell Ravney to herd these Lords-Master onto a couple of landing-craft and bring them up here?" Shatrak suggested. He made the suggestion in Lingua Terra Basic, and loudly.

"I think we can manage without that." He raised his voice, speaking in Lingua Terra Basic:

"It does not matter whether these slaves talk to us or not. This planet is now under the rule of his Imperial Majesty, Rodrik III. If this Mastership wants to govern the planet under the Emperor, they may do so. If not, we will make an end of them and set up a new government here."

He paused. Chmidd and Hozhet were looking at one another in shocked incredulity.

"Tchall, they mean it," Chmidd said. "They can do it, too."

"We have nothing more to say to you slaves," he continued. "Hereafter, we will speak directly to the Lords-Master."

"But . . . The Lords-Master never do business directly," Hozhet said. "It is un-Masterly. Such discussions are between chief-slaves."

"This thing they call the Convocation," Shatrak mentioned. "I wonder if the members have the business done entirely through their slaves."

"Oh, no!" That shocked Chmidd into direct address. "No slave is allowed in the Convocation Chamber."

He wondered how they kept the place swept out. Robots, no doubt. Or else, what happened when the Masters weren't there didn't count.

"Very well. Your people have recorders; are they on?"

Hozhet asked Chmidd; Chmidd asked the herald, who asked one of the menials in the rear, who asked somebody else. The reply came back through the same channels; they were.

"Very well. At this time tomorrow, we will speak to the Convocation of Lords-Master. Commodore Shatrak, see to it that Colonel Ravney has them in the Convocation Chamber, and that preparations in the room are made, so that we may address them in the dignity befitting representatives of his Imperial Majesty."

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He turned to the Adityan slaves. "That is all. You have permission to go."

They watched the delegation back out, with the honor-guard following. When the doors had closed behind them, Shatrak ran his hand over his bald head and laughed.

"Shaved heads, every one of them. That's probably why they thought I was your slave. Bet those gorgets are servile badges, too." He touched the Knight's Star of the Order of the Empire at this throat. "Probably thought that was what this was. We would have to draw something like this!"

"They simply can't imagine anybody not being either a slave or a slave-owner," Erskyll was saying. "That must mean that there is no free non-slave-holding class at all. Universal slavery! Well, we'll have to do something about that. Proclaim total emancipation, immediately."

"Oh, no; we can't do anything like that. The Constitution won't permit us to. Section Two, Article One: *Every Empire planet shall be self-governed as to its own affairs, in the manner of its own choice, and without interference.*"

"But slavery . . . Section Two, Article Six," Erskyll objected. *"There shall be no chattel slavery or serfdom anywhere in the Empire; no sapient being of any race whatsoever shall be the property of any being but himself."*

"That's correct," he agreed. "If this Mastership intends to remain the planetary government under the Empire, they will be obliged to abolish slavery, but they will have to do it by their own act. We cannot do it for them."

"You know what I'd do, Prince Trevannion?" Shatrak said. "I'd just heave this Mastership thing out, and set up a nice tight military dictatorship. We have the planet under martial rule now; let's just keep it that way for about five years, till we can train a new government."

That suggestion seemed to pain Count Erskyll almost as much as the existing situation.

They dined late, in Commodore Shatrak's private dining room. Beside Shatrak, Erskyll and himself, there were Lanze Degbrend, and Count Erskyll's charge-d'affaires, Sharll Ernanday, and Patrique Morvill and Pyairr Ravney and the naval intelligence officer, Commander Andrey Douvrin. Ordinarily, he deplored serious discussion at meals, but under the circumstances it was unavoidable; nobody could think or talk of anything else. The discussion which he had hoped would follow the meal began before the soup-course.

"We have a total population of about twenty million," Lanze Degbrend reported. "A trifle over ten thousand Masters, all ages and both sexes. The remainder are all slaves."

"I find that incredible," Erskyll declared promptly. "Twenty million people, held in slavery by ten thousand! Why do they stand for it? Why don't they rebel?"

"Well, I can think of three good

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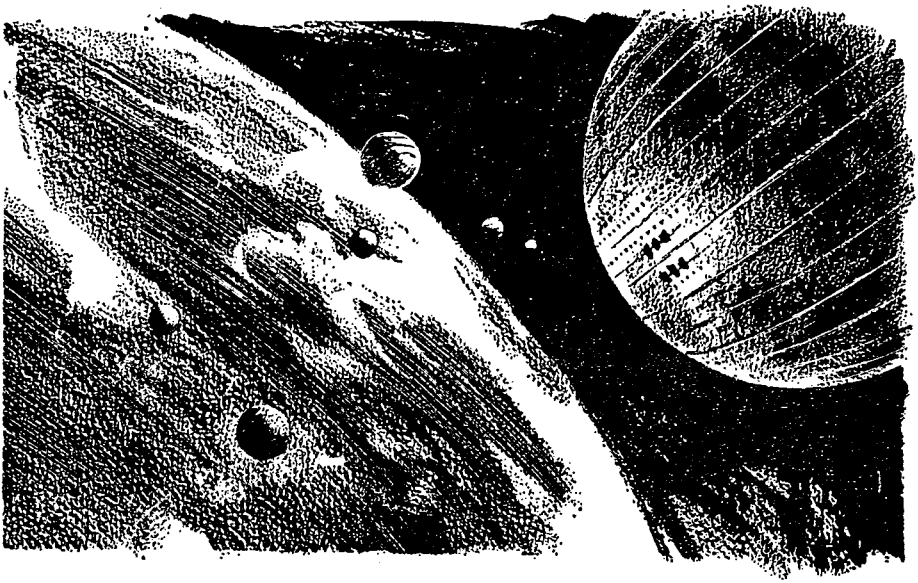

reasons," Douvrin said. "Three square meals a day."

"And no responsibilities; no need to make decisions," Degbrend added. "They've been slaves for seven and a half centuries. They don't even know the meaning of freedom, and it would frighten them if they did."

"Chain of command," Shatrak said. When that seemed not to convey any meaning to Erskyll, he elaborated: "We have a lot of dirty-necked working slaves. Over every dozen of them is an overseer with a big whip and a stungun. Over every couple of overseers there is a guard with a submachine gun. Over them is a supervisor, who doesn't need a gun because he can grab a handphone and call for troops. Over the supervisors, there are higher supervisors. Everybody has it just enough better than the level below him that he's afraid of losing his job and being busted back to fieldhand."

"That's it exactly, Commodore," Degbrend said. "The whole society is a slave hierarchy. Everybody curries favor with the echelon above, and keeps his eye on the echelon below to make sure he isn't being undercut. We have something not too unlike that, ourselves. Any organizational society is, in some ways, like a slave society. And everything is determined by established routine. The whole thing has simply been running on momentum for at least five centuries, and if we hadn't come smashing in with a situation none of the routines covered, it would have kept on running for another five, till everything

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wore out and stopped. I heard about those missile-stations, by the way. They're typical of everything here."

"That's another thing," Erskyll interrupted. "These Lords-Master are the descendants of the old Space-Vikings, and the slaves of the original inhabitants. The Space Vikings were a technologically advanced people; they had all the old Terran Federation science and technology, and a lot they developed for themselves on the Sword-Worlds."

"Well? They still had a lot of it, on the Sword-Worlds, two centuries ago when we took them over."

"But technology always drives out slavery; that's a fundamental law of socio-economics. Slavery is economically unsound; it cannot compete with power-industry, let alone cybernetics and robotics."

He was tempted to remind young Obray of Erskyll that there were no such things as fundamental laws of socio-economics; merely usually reliable generalized statements of what can more or less be depended upon to happen under most circumstances. He resisted the temptation. Count Erskyll had had enough shocks, today, without adding to them by gratuitous blasphemy.

"In this case, Obray, it worked in reverse. The Space Vikings enslaved the Adityans to hold them in subjugation. That was a politico-military necessity. Then, being committed to slavery, with a slave population who had to be made to earn their keep, they found cybernetics and robotics economically unsound."

"And almost at once, they began appointing slave overseers, and the technicians would begin training slave assistants. Then there would be slave supervisors to direct the overseers, slave administrators to direct them, slave secretaries and bookkeepers, slave technicians and engineers."

"How about the professions, Lanze?"

"All slave. Slave physicians, teachers, everything like that. All the Masters are taught by slaves; the slaves are educated by apprenticeship. The courts are in the hands of slaves; cases are heard by the chief slaves of judges who don't even know where their own courtrooms are; every Master has a team of slave lawyers. Most of the lawsuits are estate-inheritance cases; some of them have been in litigation for generations."

"What do the Lords-Master do?" Shatrak asked.

"Masterly things," Degbrend replied. "I was only down there since noon, but from what I could find out, that consists of feasting, making love to each other's wives, being entertained by slave performers, and feuding for social precedence like wealthy old ladies on Odin."

"You got this from the slaves? How did you get them to talk, Lanze?"

Degbrend and Ravney exchanged amused glances. Ravney said:

"Well, I detailed a sergeant and six privates to accompany Honorable Degbrend," Ravney said. "They . . . How would you put it, Lanze?"

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"I asked a slave a question. If he refused to answer, somebody knocked him down with a rifle-butt," Degbrend replied. "I never had to do that more than once in any group, and I only had to do it three times in all. After that, when I asked questions, I was answered promptly and fully. It is surprising how rapidly news gets around the Citadel."

"You mean you had those poor slaves beaten?" Erskyll demanded.

"Oh, no. Beating implies repeated blows. We only gave one to a customer; that was enough."

"Well, how about the army, if that's what those people in the long red-brown coats were?" Shatrak changed the subject by asking Ravney.

"All slave, of course, officers and all. What will we do about them, sir? I have about three thousand, either confined to their barracks or penned up in the Citadel. I requisitioned food for them, paid for it in chits. There were a few isolated companies and platoons that gave us something of a fight; most of them just threw away their weapons and bawled for quarter. I've segregated the former; with your approval, I'll put them under Imperial officers and noncoms for a quickie training in our tactics, and then use them to train the rest."

"Do that, Pyairr. We only have two thousand men of our own, and that's not enough. Do you think you can make soldiers out of any of them?"

"Yes, I believe so, sir. They are trained, organized and armed for civil-order work, which is what we'll need them for ourselves. In the entire history of this army, all they have done has been to overawe unarmed slaves; I am sure they have never been in combat with regular troops. They have an elaborate set of training and field regulations for the sort of work for which they were intended. What they encountered today was entirely outside those regulations, which is why they behaved as they did."

"Did you have any trouble getting cooperation from the native officers?" Shatrak asked.

"Not in the least. They cooperated quite willingly, if not always too intelligently. I simply told them that they were now the personal property of his Imperial Majesty, Rodrik III. They were quite flattered by the change of ownership. If ordered to, I believe that they would fire on their former Lords-Master without hesitation."

"You told those slaves that they . . . *belonged* . . . to the *Emperor?*"

Count Erskyll was aghast. He stared at Ravney for an instant, then snatched up his brandy-glass—the meal had gotten to that point—and drained it at a gulp. The others watched solicitously while he coughed and spluttered over it.

"Commodore Shatrak," he said sternly. "I hope that you will take severe disciplinary action; this is the most outrageous . . ."

"I'll do nothing of the sort," Shat-

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rak retorted. "The colonel is to be commended; did the best thing he could, under the circumstances. What are you going to do when slavery is abolished here, Colonel?"

"Oh, tell them that they have been given their freedom as a special reward for meritorious service, and then sign them up for a five year enlistment."

"That might work. Again, it might not."

"I think, Colonel, that before you do that, you had better disarm them again. You might possibly have some trouble, otherwise."

Ravney looked at him sharply. "They might not want to be free? I'd thought of that."

"Nonsense!" Erskyll declared. "Who ever heard of slaves rebelling against freedom?

Freedom was a Good Thing. It was a Good Thing for everybody, everywhere and all the time. Count Erskyll knew it, because freedom was a Good Thing for him.

He thought, suddenly, of an old tomcat belonging to a lady of his acquaintance at Paris-on-Baldur, a most affectionate cat, who insisted on catching mice and bringing them as presents to all his human friends. To this cat's mind, it was inconceivable that anybody would not be most happy to receive a nice fresh-killed mouse.

"Too bad we have to set any of them free," Vann Shatrak said. "Too bad we can't just issue everybody new servile gorgets marked, *Personal Property of his Imperial Majesty* and let it go at that. But I guess we can't."

"Commodore Shatrak, you are joking," Erskyll began.

"I hope I am," Shatrak replied grimly.

The top landing-stage of the Citadel grew and filled the forward viewscreen of the ship's launch. It was only when he realized that the tiny specks were people, and the larger, birdseed-sized, specks vehicles, that the real size of the thing was apparent. Obray of Erskyll, beside him, had been silent. He had been looking at the crescent-shaped industrial city, like a servile gorget around Zeggensburg's neck.

"The way they've been crowded together!" he said. "And the buildings; no space between. And all that smoke! They must be using fossil-fuel!"

"It's probably too hard to process fissionables in large quantities, with what they have."

"You were right, last evening. These people have deliberately halted progress, even retrogressed, rather than give up slavery."

Halting progress, to say nothing of retrogression, was an unthinkable crime to him. Like freedom, progress was a Good Thing, anywhere, at all times, and without regard to direction.

Colonel Ravney met them when they left the launch. The top landing-stage was swarming with Imperial troops.

"Convocation Chamber's three stages down," he said. "About two

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thousand of them there now; been coming in all morning. We have everything set up." He laughed. "They tell me slaves are never permitted to enter it. Maybe, but they have the place bugged to the ceiling all around."

"Bugged? What with?" Shatrak asked, and Erskyll was wanting to know what he meant. No doubt he thought Ravney was talking about things crawling out of the woodwork.

"Screen pickups, radio pickups, wired microphones; you name it and it's there. I'll bet every slave in the Citadel knows everything that happens in there while it's happening."

Shatrak wanted to know if he had done anything about them. Ravney shook his head.

"If that's how they want to run a government, that's how they have a right to run it. Commander Douvrin put in a few of our own, a little better camouflaged than theirs."

There were more troops on the third stage down. They formed a procession down a long empty hallway, a few scared-looking slaves peeping from doorways at them. There were more troops where the corridor ended in great double doors, emblazoned with a straight broadsword diagonally across an eight-pointed star. Emblematology of planets conquered by the Space Vikings always included swords and stars. An officer gave a signal; the doors started to slide apart, and within, from a screen-speaker, came a fanfare of trumpets.

. At first, all he could see was the projection-screen, far ahead, and the tessallated aisle stretching toward it. The trumpets stopped, and they advanced, and then he saw the Lords-Master.

They were massed, standing among benches on either side, and if anything Pyairr Ravney had understated their numbers. They all wore black, trimmed with gold; he wondered if the coincidence that these were also the Imperial colors might be useful. Queer garments, tightly fitted tunics at the top which became flowing robes below the waist, deeply scalloped at the edges. The sleeves were exaggeratedly wide; a knife or a pistol, and not necessarily a small one, could be concealed in every one. He was sure that thought had entered Vann Shatrak's mind. They were armed, not with dress-daggers, but with swords; long, straight cross-hilted broadswords. They were the first actual swords he had ever seen, except in museums or on the stage.

There was a bench of gold and onyx at the front, where, normally the seven-man Presidium sat, and in front of it were thronelike seats for the Chiefs of Managements, equivalent to the Imperial Council of Ministers. Because of the projection screen that had been installed, they had all been moved to an improvised dais on the left. There was another dais on the right, under a canopy of black and gold velvet, emblazoned with the gold sun and superimposed black cogwheel of the Empire. There were three thrones, for himself, Shat-

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rak, and Erskyll, and a number of lesser but still imposing chairs for their staffs.

They took their seats. He slipped the earplug of his memophone into his left ear and pressed the stud in the middle of his Grand Star of the Order of Odin. The memophone began giving him the names of the Presidium and of the Chiefs of Managements. He wondered how many upper-slaves had been gunbutted to produce them.

"Lords and Gentlemen," he said, after he had greeted them and introduced himself and the others, "I speak to you in the name of his Imperial Majesty, Rodrik III. His Majesty will now greet you in his own voice, by recording."

He pressed a button on the arm of his chair. The screen lighted, flickered, and steadied, and the trumpets blared again. When the fanfare ended, a voice thundered:

"The Emperor speaks!"

Rodrik III compromised on the beard question with a small mustache. He wore the stern but kindly expression the best theatrical directors in Asgard had taught him; Public Face Number Three. He inclined his head slightly and stiffly, as a man wearing a seven-pound crown must.

"We greet our subjects of Aditya to the fellowship of the Empire. We have long had good reports of you, and we are happy now to speak to you. Deserve well of us, and prosper under the Sun and Cogwheel."

Another fanfare, as the image vanished. Before any of the Lords-Master could find voice, he was speaking to them:

"Well, Lords and Gentlemen, you have been welcomed into the Empire by his Majesty. I know, there hasn't been a ship in or out of this system for five centuries, and I suppose you have a great many questions to ask about the Galactic Empire. Members of the Presidium and Chiefs of Managements may address me directly; others will please address the chairman."

Olvir Nikkolon, the owner of Tchall Hozhet, was on his feet at once. He had a loose-lipped mouth and a not entirely straight nose and pale eyes that were never entirely still.

"What I want to know is; why did you people have to come here to take our planet away from us? Isn't the rest of the Galaxy big enough for you?"

"No, Lord Nikkolon. The Galaxy is not big enough for any competition of sovereignty. There must be one and only one completely sovereign power. The Terran Federation was once such a power. It failed, and vanished; you know what followed. Darkness and anarchy. We are clawing our way up out of that darkness. We will not fail. We will create a peaceful and unified Galaxy."

He talked to them, about the collapse of the old Federation, about the interstellar wars, about the Neobarbarians, about the long night. He told them how the Empire had risen on a few planets five thousand light-

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years away, and how it had spread.

"We will not repeat the mistakes of the Terran Federation. We will not attempt to force every planetary government into a common pattern, or dictate the ways in which they govern themselves. We will foster in every way peaceful trade and communication. But we will not again permit the plague of competing sovereignties, the condition under which war is inevitable. The first attempt to set up such a sovereignty in competition with the Empire will be crushed mercilessly, and no planet inhabited by any sapient race will be permitted to remain outside the Empire.

"Lords and Gentlemen, permit me to show you a little of what we have already accomplished, in the past three hundred years."

He pressed another button. The screen flickered, and the show started. It lasted for almost two hours; he used a handphone to interject comments and explanations. He showed them planet after planet—Marduk, where the Empire had begun, Baldur, Vishnu, Belphegor, Morglay, whence their ancestors had come, Amaterasu, Irminsul, Fafnir, finally Odin, the Imperial Planet. He showed towering cities swarming with aircars; spaceports where the huge globes of interstellar ships landed and lifted out; farms and industries; vast crowds at public celebrations; troop-reviews and naval bases and fleet-maneuvers; historical views of the battles that had created Imperial power.

"That, Lords and Gentlemen, is what you have an opportunity to bring your planet into. If you accept, you will continue to rule Aditya under the Empire. If you refuse, you will only put us to the inconvenience of replacing you with a new planetary government, which will be annoying for us and, probably, fatal for you."

Nobody said anything for a few minutes. Then Rovard Javasan, the Chief of Administration and the owner of the mountainous Khreggor Chmidd, rose.

"Lords and Gentlemen, we cannot resist anything like this," he said. "We cannot even resist the force they have here; that was tried yesterday, and you all saw what happened. Now, Prince Trevannion; just to what extent will the Mastership retain its sovereignty under the Empire?"

"To practically the same extent as at present. You will, of course, acknowledge the Emperor as your supreme ruler, and will govern subject to the Imperial Constitution. Have you any colonies on any of the other planets of this system?"

"We had a shipyard and docks on the inner moon, and we had mines on the fourth planet of this system, but it is almost airless and the colony was limited to a couple of dome-cities. Both were abandoned years ago."

"Both will be reopened before long, I daresay. We'd better make the limits of your sovereignty the orbit of the outer planet of this system. You may have your own normal-space ships, but the Empire will con-

« *Continued on page 113* »

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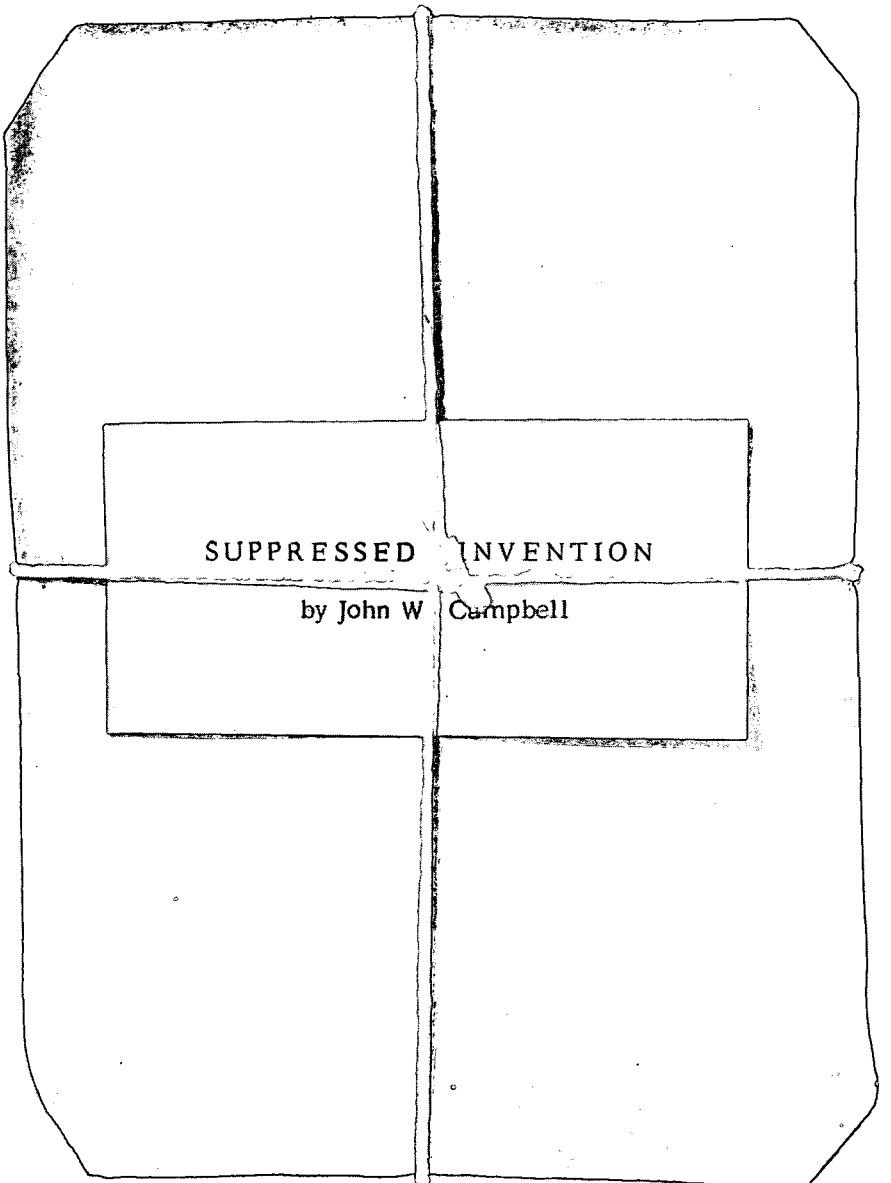

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The high point in the movie "Edison The Man", featured a scene in which we see Edison and his crew of laboratory workers gathered around a single glowing electric light . . . waiting for it to burn out. And hoping it will last a long, long time.

The audience, of course, knew all the time that *this* lamp was really going to work. But, if you happened to see that movie, did you think to wonder just what power supply was running that marvelous new invention, the electric light? It wasn't plugged into the wall outlet, you know! Edison and his gang didn't start inventing electrical power distribution systems until after they'd developed a working electric lamp, and a workable electric generator!

A "suppressed invention" is one that Vested Interests have surpressed for their Own Selfish Reasons. . ? And of course that can only mean the Villains of Wall Street, huh. . . . .? Not this one, though— it was Ivory Tower Street that did it!

After Galvani first observed a dead frog's leg twitch when touched with two different metals, and Volta did his work on electrochemical cells, science for the first time had available a source of current electricity: the electrochemical cell—which was as remarkable and immense a breakthrough in its day, as the atomic pile was in 1942—and lead to the Voltaic Pile.

The early work done in electrochemistry—the first isolation of sodium, potassium, etc., by electrolytic methods—stemmed from the development of the electrochemical cell, the only source of electric power Man had.

That first electric lamp may have been powered by a type of battery that Edison had developed—one known as the Edison-Leland cell.

Dynamos existed at the time Edison developed his lamp—but they were marvelously inefficient, unreliable and impractical. The Edison-Leland cell was, actually, a type of fuel cell—not in quite the modern meaning of the term, but nonetheless effectively a true fuel cell. It burned zinc, lye, and air and produced electric power. The zinc plates were immersed in a sodium or potassium hydroxide solution; the positive plates were copper with copper oxide depolarizer. The cells delivered about 0.8 volts, and would supply a good husky current. They were simple, rugged, and relatively cheap—zinc is, actually, a fairly cheap fuel. The battery would yield a good current until the copper oxide gave out,

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whereupon the voltage dropped off sharply. So then the copper plates were simply lifted out of the battery, dunked in clear water, and shoved in the oven for a while—and the hot copper absorbed oxygen from the air, formed copper oxide again, and was put back for another go-round.

mary battery! Why waste time and effort, then, building the storage battery at all?

Once Edison developed the electric light, and the technology of a dynamo that was practical for supplying power efficiently, and then the technology necessary to ship power

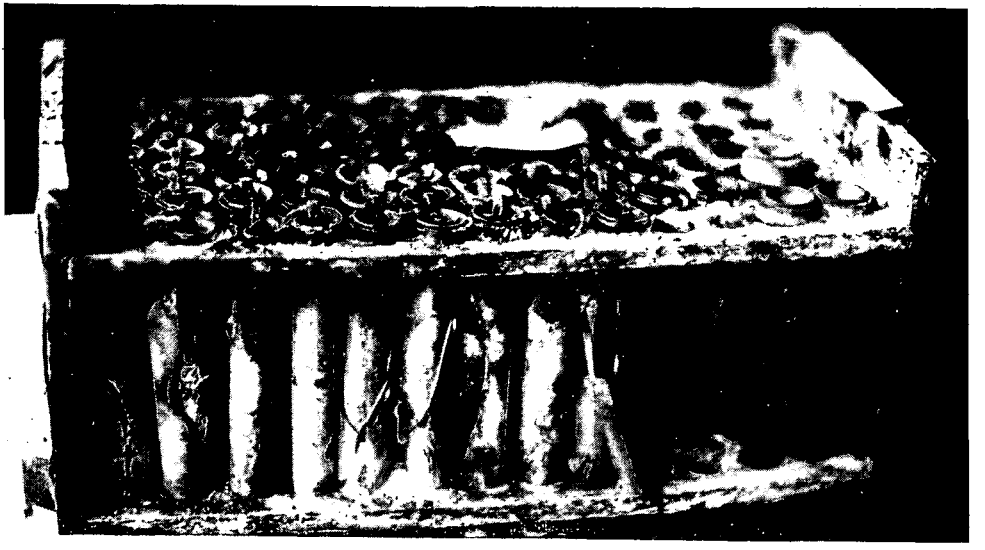

Fig. 1. Back in the 1920's, this was an Edison type Ni-Fe 135-volt Storage B battery for a broadcast receiver. Along about 1928 it was displaced by a powerline-operated receiver—and the owner stored it in a back corner of his basement. Some 30 years of 100% solid neglect later, it had achieved this state of obvious total ruin.

Nobody was much interested in storage batteries in those days; there wasn't any reason whatever for a storage battery, since the only practical source of power with which to charge the battery would be a pri-

from dynamo to point of use, *for the first time storage batteries became practical devices.* For the first time, there was a source of electric power cheaper than that produced by "burning" zinc electrochemically, and

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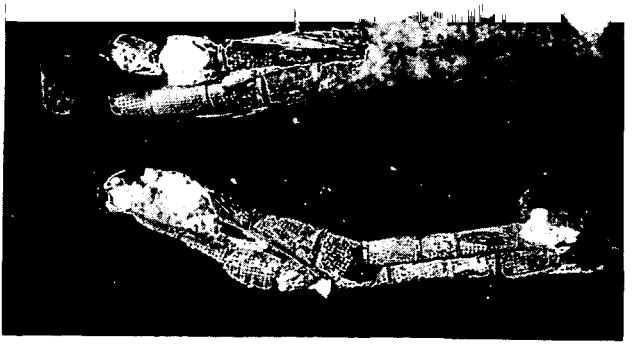

Fig. 2. The electrolyte—KOH—had dried out, absorbed carbon dioxide from the air, and in crystalizing out burst the steel tubes of the anodes, and the glass test-tubes in which they were mounted. Ruin obviously beyond redemption.

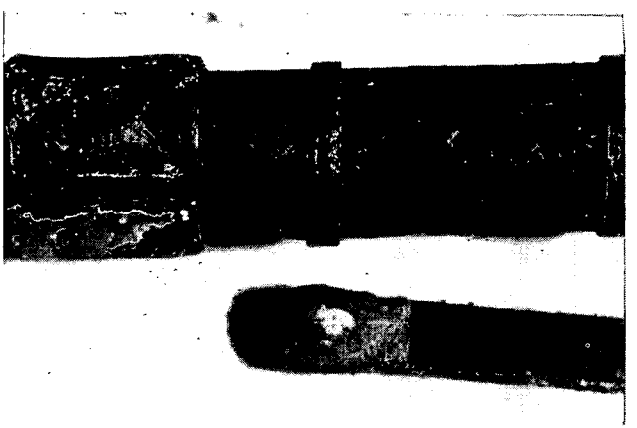

Fig. 3. Only . . . by soaking in hot water to leach out the carbonate, immersing in KOH electrolyte, and charging them . . . they proved to be in perfect electrical working order! Even 30 years of total neglect couldn't kill 'em! This close-up shows the mechanical structure of the Edison type $Ni(OH)_2$ anodes. Standard paper match for size comparison.

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therefore cheap enough to make it desireable to store it instead of simply producing it on the spot.

The Planté storage cell—the original lead-acid storage battery—was invented long before, but strictly due to accident and misunderstanding; Planté had been trying to store electricity all right—but he was trying to make a condenser-type storage device, having no idea of inventing a secondary battery at the time. The original lead-acid cell consisted of nothing more complex than two sheets of lead dipped in dilute sulfuric acid; it's a fundamental system that works fine today, of course, as it did then—and for some special purposes makes a highly desireable type of battery. The capacity is limited, it's extremely heavy ("heavy as lead!") but it has a long, long life.

Once Edison developed electric power technology, however, the desireability of having a secondary cell

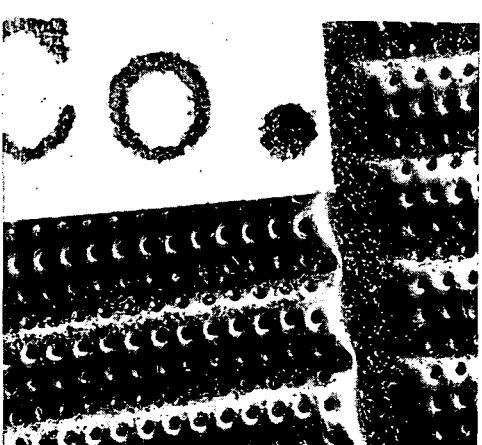

Fig. 4. The Jungner-type nickel anode uses a much finer-structured design for holding the active material—which is a major part of the reason Jungner batteries could be used for engine starting, while Edison batteries could not.

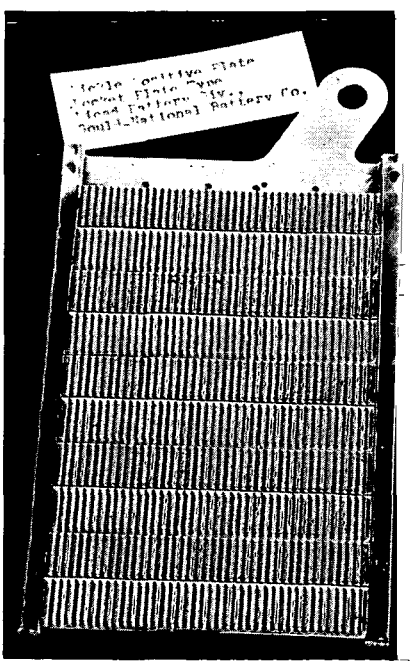

Fig. 5. Compare the very fine perforations of the Gould-National Nicad plate with the coarser structure in the Edison anode of Fig. 3. That's standard Pica typewriter type for size comparison!

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became apparent—and for the first time serious efforts were directed toward their development. Edison always did think direct current was the only right way to work with electricity; for one thing, the problems of alternating current engineering were, actually, considerably beyond the theoretical capabilities of mathematical physics at the time.

But direct current presents some extremely rugged problems in shipping power from A to B. You can't build DC transformers to step voltages up and down, which means you've got to work with low-voltage, high-current equipment. Copper cables as thick as a man's arm are expensive—particularly when you want to run them ten or fifteen miles!

So Edison set about developing a better "bucket" to carry his "juice" from the end of his pipe-line to points beyond—and to make mobile electric-powered devices possible.

The Edison nickle-iron storage battery resulted from that effort; a storage battery that was enormously superior to anything that had existed, far lighter than the lead-acid type, far more rugged mechanically, chemically, and electrically. It had very real, and very great advantages over the lead-acid cells that were its only competitors—and a couple of minor disadvantages. Only—the minor disadvantages just happened to be crucial, and almost completely ruined its potential.

The Ni-Fe battery uses an electrolyte of KOH, laced with a little LiOH; the alkalie electrolyte is not

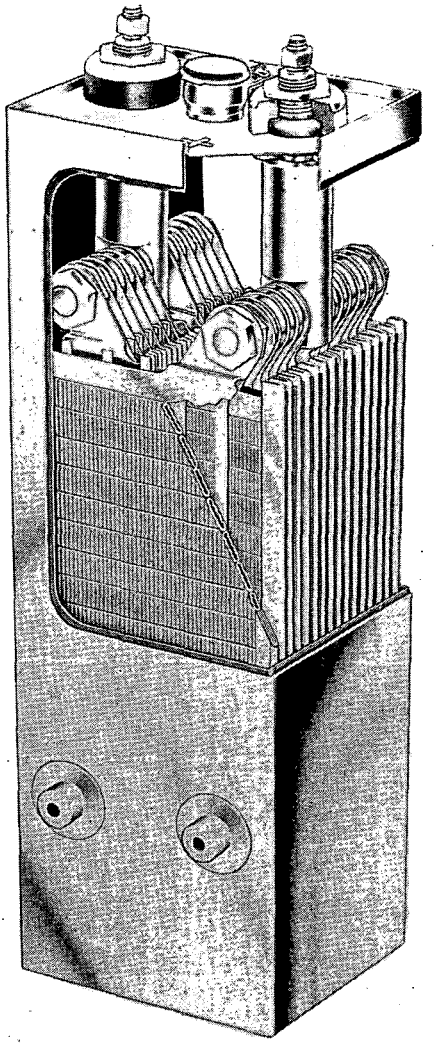

Fig. 6. This is a Gould-National Nicad cell in cut-away; both Edison and Nicad cells use the general structure made possible by the very high strength of the nickel-plated steel plates, and steel cell case. Separators aren't needed, because the plates themselves are adequately rigid.

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anywhere near as destructively corrosive as sulfuric acid, and actually protects most metals against corrosion. The cells, therefore, instead of having to be made of glass or hard rubber, could be made of nickle-plated sheet steel.

The Edison battery is almost incredibly resistant to destruction either mechanically, chemically, or electrochemically; the plates are made of nickle-plated steel with small tubes of nickle oxide for the positive, and small flattened packets of iron for the negative. Currently, nickle sells for about 50¢ per pound, and iron is, of course, even cheaper.

The Edison Ni-Fe battery is very decidedly lighter per kilowatt-hour of capacity, and per ampere-hour, than the best lead-acid batteries. Their normal service life is about 5 to 10 times that of a lead-acid cell—15 to 20 years of service is quite normal for an Edison cell.

So—then how come we don't see Edison cells in use all around us? How come this wonderful battery never got much beyond first base?

Oh, they were used all right—they powered battery-operated electric locomotives, electric trucks, and are, today, being used in electric fork-lift trucks, baggage trucks and the like. They are, beyond question, excellent batteries.

But, look—how come the U.S. Navy didn't use these rugged, light, long-lived, reliable efficient cells in the pre-nuclear submarines? Certainly there was a place for a rugged, reliable, long-lived, low-weight, high-capacity battery if ever there was one—and it's a vehicle application, such as Edison had in mind when he worked out the battery?

Here, it seems, was a major invention that was somehow being neglected.

Well, there were a couple of leeetle defects.

An Edison cell will *not* deliver its charge in a great rush of high-current output. It's got lots of stored energy, maybe—but it insists that you be patient about taking it out. Nothing hurried about it. The normal voltage per cell is approximately 1.2 volts; if you spend 5 to 8 hours drawing out the energy, it's an efficient cell. Try getting it all out in, say, 20 minutes—and you get only a small fraction of the charge, and the voltage collapses to about 0.2 volts.

In a submarine, the standard system is to have two electric motors, and two big battery banks. For underwater cruising, the batteries are connected in parallel, and the motors in series—say a 100 volt battery, working into a 200 volt motor. For getting some place at a more active speed, the batteries are connected in parallel, and the motors in parallel—a 100 volt battery working into 100 volt motors. And when there is reason to get the hell outa there, but fast! the technique is to connect the battery banks in series, and the motors in parallel—a 200 volt battery working into a 100 volt motor.

Try that last trick with an Edison battery bank, and you'll find you have a 50 volt battery working into a 100

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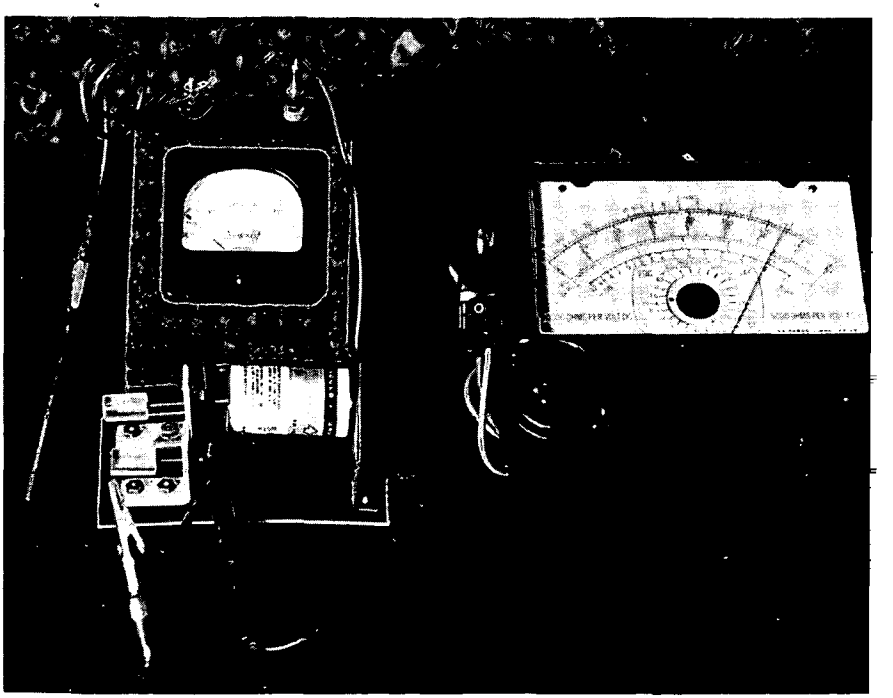
volt motor; the cell voltage simply collapses under heavy current demand.

The reason you haven't seen Edison batteries around much lies right there—the voltage collapses under any sudden heavy-current load, and the great use for storage batteries that developed in the 20th century was, of course, for automobile starting, a use that consumed millions of batteries every year. And the service involves exactly the type of work an Edison battery can *not* handle; the standard six-volt starter system for a standard light car such as the Ford or Chevrolet of a few years ago imposed

Fig. 7-A. The Nicad sintered-plate size D flashlight cell set up for extreme-load test. I had to build a special cell-holder; no commercial cell-holder can handle the massive currents a Nicad cell delivers. This is the starting set-up; the multirange meter is on a 1.6 volt scale, reading the freshly-charged Nicad cell at 1.28 volts.



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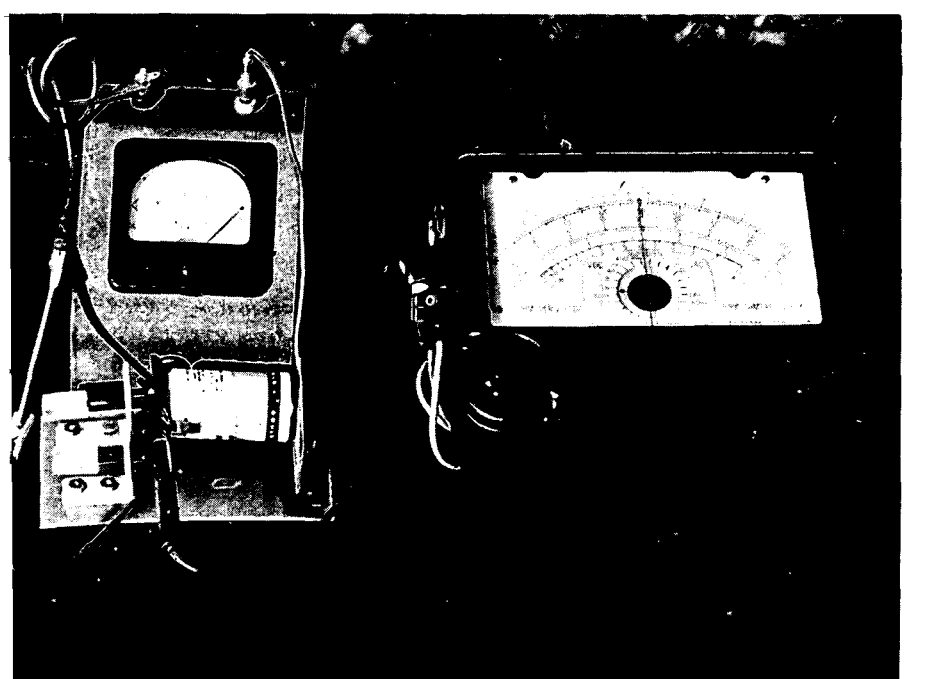
a load of up to 550 amperes on the battery when starting a cold, stiff, new engine. Even a well-broken-in engine, on a warm summer day, would draw 300 amperes or so.

For submarine work, however, the Edison cell has another unpleasant little habit; the iron electrode gases off hydrogen continuously. It gases off hydrogen while it's being charged; it gases off while it's standing idle, and it gases off while it's working. And submariners simply do not like having hydrogen gas added to the atmosphere of their cramped little ship full of all sorts of electrical equipment. Hydrogen may not be

Fig. 7-B. The Triplet 50-ampere meter shows a 47 ampere drain, with the cell voltage holding up to 0.78 volts under that load. The "inefficient" long leads and alligator clips in the circuit—plus the piece of 6-32 threaded brass rod —are needed to protect the 50-ampere meter from the full violence of the flashlight battery!



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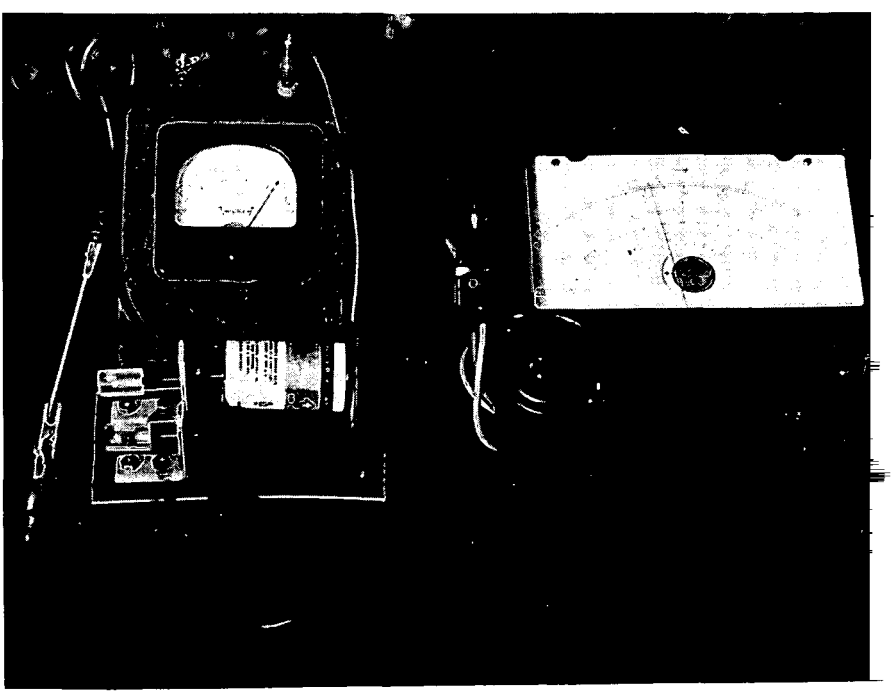
poisonous in the usual sensé—but in a submarine's atmosphere it's strictly sudden death!

More generally serious is the fact that that hydrogen gas is generated at the expense of the chemical energy stored in the iron of the cathode—it's due to self-discharge of the energy you want stored. An Edison battery simply will not hold a charge; it leaks off in the form of hydrogen bubbles. One of the inefficiency factors in the Edison battery is the fact that hydrogen bubbles are discharged continuously during charge—at the expense of the energy of the charging current. Edison battery operators say

Fig. 7-C After ninety consecutive seconds, the sintered-plate cell is still throwing a current of 42 amperes, at 0.64 volts.

Fig. 7-D. An equivalent test of a fresh, first-quality standard dry cell shows approximately 6 amps, at 0.10 volts at the start. The cell was, naturally, ruined in a few seconds.



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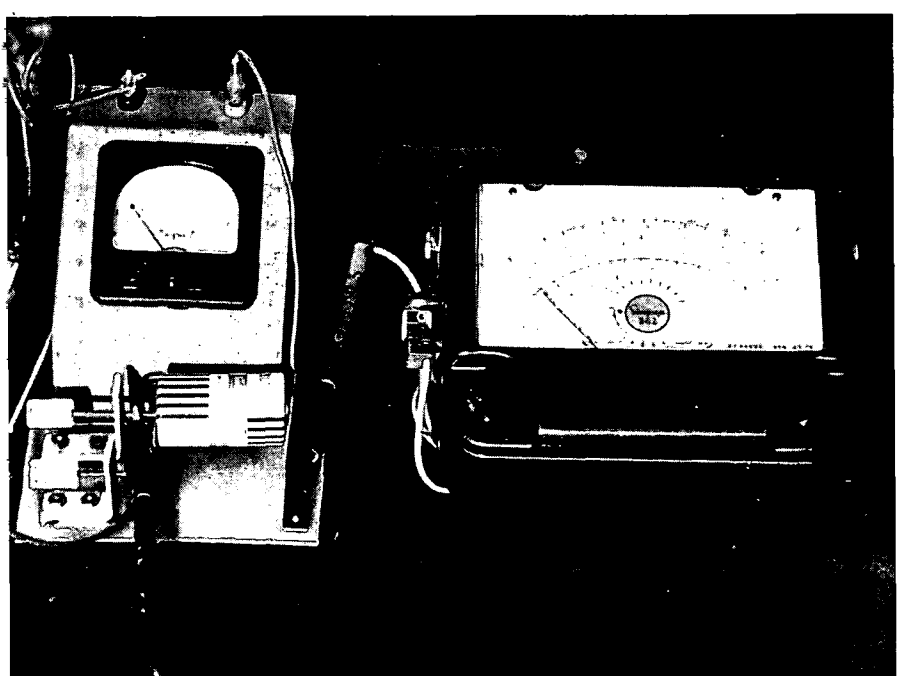
"If it ain't gassing off, the iron ain't taking a charge."

Put an Edison battery on the shelf for a few months, and it will be completely discharged when you come back to it.

Of course, that doesn't harm an Edison cell in the slightest; the normal technique for putting Edison cells in storage in a warehouse is to strap their terminals together—they're normally stored for weeks, months, or years if you wish, short-circuited. While it doesn't harm the cells—it does make them useless as emergency power reserves in many instances. When you need the stored power, you discover it's gone off into the wild blue yonder in the form of hydrogen bubbles.

So, the lead-acid storage battery, with its long catalog of extremely serious faults, won the market because it had one essential, and one desireable, characteristic: The lead-acid cell is able to throw very heavy currents without complete voltage collapse, which was essential for automobile starting, and it's first price, its purchase price, is far lower than that either of the two competing batteries.

Its faults, however, are major, numerous, and inherently incurable.



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The first fault is obviously incurable; it's heavy as lead. Acutally, a lead-acid battery is even more weight-loaded than that, because the sulfuric acid has to serve two functions. The chemical reactions of the lead-acid battery are:

Anode reaction: $PbO_2 + H_2SO_4 = PbSO_4 + H_2O + O^{--}$

Cathode reaction: $Pb + H_2SO_4 = PbSO_4 + 2H^+$

Combined Reaction: $PbO_2 + Pb + 2H_2SO_4 = 2PbSO_4 + 2H_2O$

The sulfuric acid is consumed, and water produced, which is why the state of charge in a standard lead-acid battery can be determined by

Fig. 7-E. Equivalent test of a high-quality pressed-plate type Ni-Cd cell shows it acts almost exactly as the standard dry-cell does—about 7 amps at 0.10 volts. With the major difference that it is perfectly rechargeable, and entirely unharmed by this treatment.

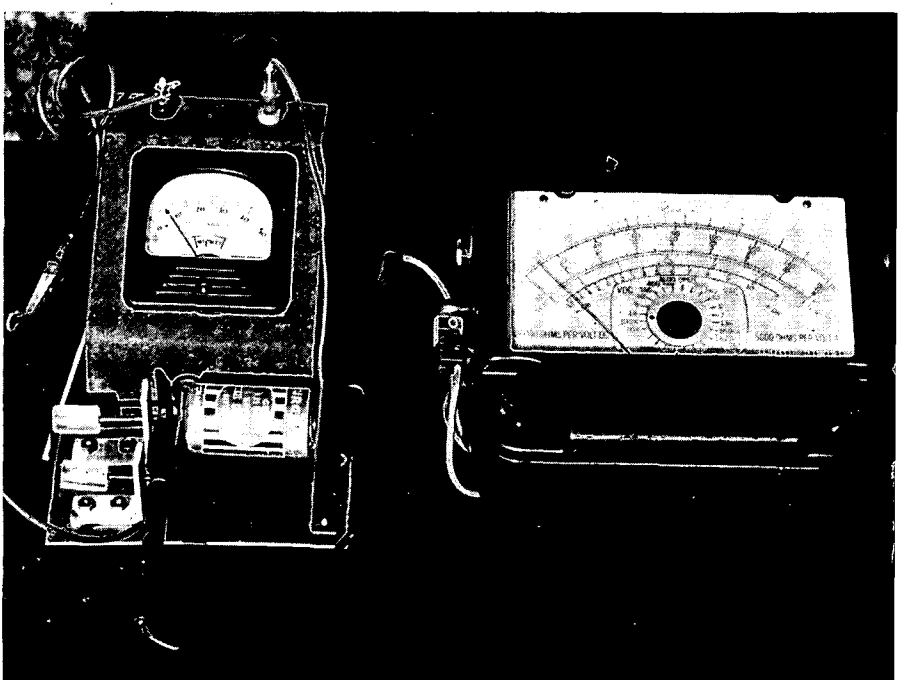

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Fig. 8. One handful of Nicad sintered-plate cells can deliver power enough to start a standard 6-volt light automobile. Five cells deliver just over 6.2 volts.

measuring the specific gravity of the electrolyte. The state of charge of an Edison battery cannot be so determined, because in the Ni-Fe cell, the electrolyte serves, in effect, simply as a sort of conveyor belt for OH^- ions. The reactions in the Edison cell are:

Andoe reaction: $Ni(OH)_3 = Ni(OH)_2 + OH^-$

Cathode Reaction: $Fe + 2OH^- = Fe(OH)_2$

Combined reaction: $2Ni(OH)_3 + Fe = 2Ni(OH)_2 + Fe(OH)_2$

In this system the electrolyte—potassium hydroxide—does not enter into the reaction; it merely serves to transport OH^- ions from the Ni anode to the Fe cathode.

All of which didn't seem to mean much, once the electric power lines got spread across the country—or at least, across those parts of the world where there was economic wealth enough to be able to do anything about electric power problems. There's been no great point in running highly expensive electric power facilities into Amazon jungle areas—nor any great demand from such areas for portable stored power, no demand great enough to support an industry, to reward a research effort to produce a better storage battery. Nobody thought there was any re-

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Fig. 9. This is a picture of why you have to buy a new lead-acid battery every couple of years. This sheet-lead plate was made the positive plate in a test-cell, and charge-discharge cycled until the chocolate-brown layer of PbO_2 formed. It then acted as a vigorous anode plate. But next it was over-discharged, then over-charged a few times. . . . .

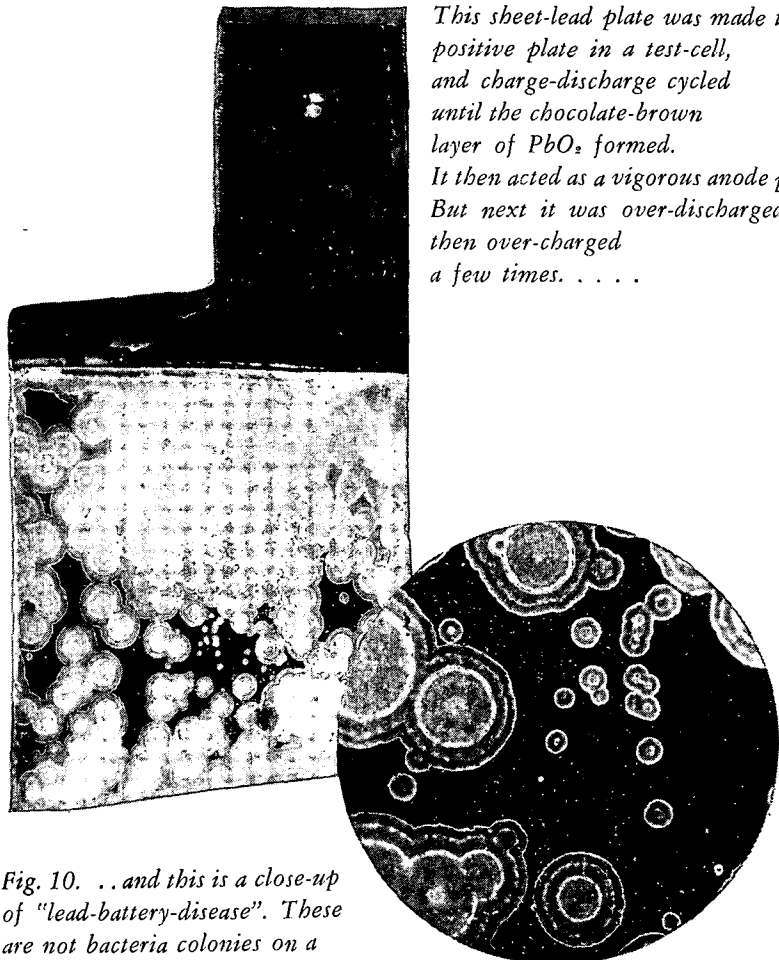

Fig. 10. . . and this is a close-up of "lead-battery-disease". These are not bacteria colonies on a biologist's culture-plate, but growth-rings of white lead sulfate in process of ruining a lead-acid battery plate. The useful area of the whole plate was about 1½ x 1½ inches.

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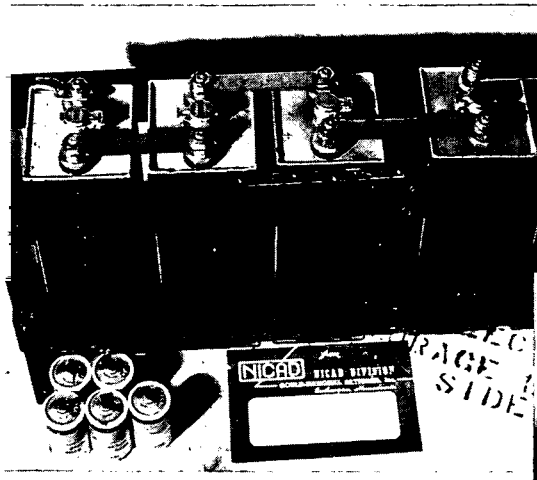

Fig. 10-A. A 1962-model of the original style Jungner Ni-Cd battery—five 30-ampere-hour cells to make a six-volt battery. Steel-cased cells are held and insulated in well-made hardwood racks. (Wood isn't new—but it's an excellent structural material still!) The steel cells must be insulated from each other. On the packing case lid beside the old-style Nicad are five sintered-plate cells—they yield six volts and four ampere-hours.

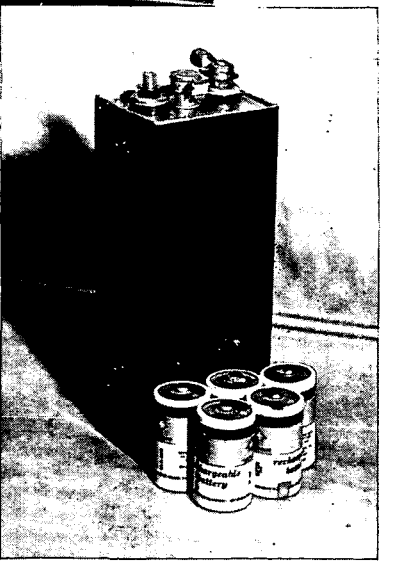

Fig. 10-B. A single cell of the original Jungner type compared with what an active research program yielded. The five-small ones, in parallel, yield the same voltage, and 2/3rds of the capacity of the big one.

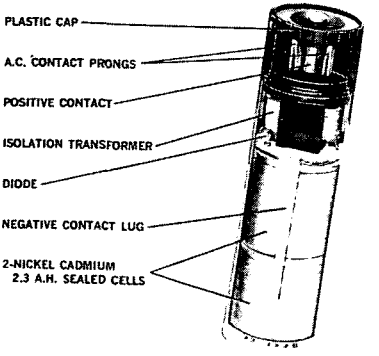

Fig. 11. Cut-away view of the typical plug-in-the-wall rechargeable Ni-Cd flashlight battery unit. This one's the Nicad Battery Co. design, but Nicad supplies them to a number of companies for sale under assorted brand-names.

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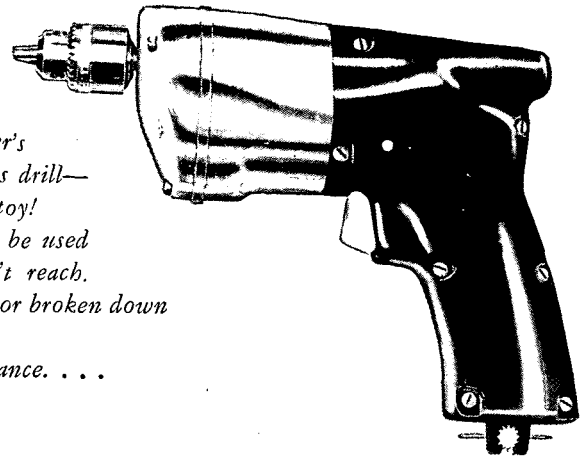
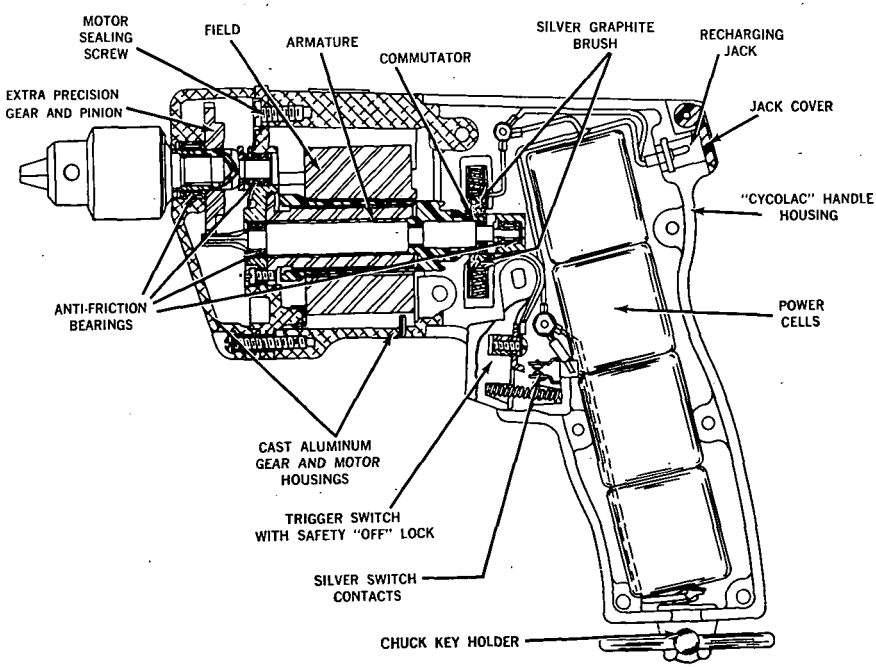


Fig. 12. Black & Decker's Nicad powered cordless drill— a full-size, tool*—not a toy! A power-tool that can be used where powerlines don't reach. A farmer with his tractor broken down in the far corner of that south 40, for instance. . . .*



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ward to be gained from devoting the time, effort, and ingenuity required to produce a really new, and really good storage battery. Besides, ever since Edison's dynamos first went to work, people have known that batteries were pretty puny stuff, not really good for anything except very temporary heavy loads, like car starting, or small loads like children's toys. Batteries aren't *real* power sources!

And everybody was wrong.

Above I mentioned that the lead-acid battery had *two* competitors; the Edison battery was one—the other was one that you couldn't even find out about in the United States until after WWII!

It just happens that batteries have been something of a hobby of mine for some 35 years; I started experimenting with them as an amateur interest, when I was in high-school. I've never made a formal literature search of the subject, but I generally looked around in libraries to see what books they had on batteries, both primary and secondary, and over the course of years accumulated considerable information on them. Most of it sort of odd-ball stuff, but in the process, learned more than the elementary material about the standard battery types.

Fig. 13. Cutaway of the Black & Decker cordless drill shows how little space could be alloted to batteries. Under max load, the motor draws 55 amperes from the half-D size cells. Bet the engineers had fun designing a trigger switch to handle that current with only five volts maximum.

In various books, I've learned about some strange ones; I started doing some experiments on fuel cells back in 1932, somewhat before the current acute interest in the problem.

In the widely-known and respected Chemical Rubber Co. *Handbook of Chemistry & Physics*, there's a couple of pages devoted to discussing various types of primary and secondary cells.

Nowhere, before 1945, did I encounter any discussion of the Jungner battery.

The *Handbook of Chemistry & Physics* latest available edition still doesn't know the Jungner Ni-Cd battery exists! Yet that two-page listing describes the Grove, Bunsen, Danial, and assorted other one and two fluid cells. It mentions the Main Accumulater (PbO_2 — Zn in H_2SO_4; chiefly remarkable for having powered the electric car that, for several years, held the world's automobile speed record of about 78 mph) and several others—as well as, naturally, the lead-acid and the Edison cell.

It seems that, somehow, everybody thought the Jungner cell was a minor, unimportant variation of the Edison Ni-Fe cell. Jungner's battery simply used metallic cadmium as the negative instead of metallic iron. Gives essentially the same voltage—cad-

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mium's $1.70 a pound against iron's so-much-a-ton price—too unimportant to mention. . . .

The basic patents on Jungner's battery were issued in 1899 and the next few years, in England, Germany and Sweden. Jungner was a young Swedish engineer, who had developed a type of electrical fire alarm. It was a good alarm system, and sold very well—but got into difficulties because the batteries on which it depended weren't dependable. He'd been using primary cells—dry-cells of the familiar type—and the "shelf-life" killed the batteries while the fire-alarm was waiting for a fire. To save his successful business, Jungner had to come up with a new kind of battery that *could* be depended on—and while he was at it, since power-lines made electric power cheap—why not make the new battery a storage cell?

Edison was looking for a battery that could be used to extend the effective reach of his power-lines; for him, the Ni-Fe was fine. Jungner found the Ni-Fe system, too, at about the same time Edison did—and dropped it quick. That trick of self-discharge into hydrogen bubbles was precisely what he did *not* want!

The battery Jungner developed uses cadmium metal as the negative electrode material. The positive electrode is, like Edison's, nickle oxide-hydroxide. (Nobody knows exactly what that electrode actually is; the electrode reaction given above is a rough approximation of what actually happens, but not too close an approximation.) The negative electrode reaction in the Jungner battery is exactly that in the Edison battery, with Cd replacing Fe:

$$Cd + 2OH^- = Cd(OH)_2$$

At first glance, it does seem like a distinction-without-much-difference sort of thing, doesn't it?

I have a Ni-Cd storage battery the size, shape, and appearance of a standard D-cell flashlight battery—a development of the original Jungner cell—which can slam the needle on my 50 ampere meter against the stop-pin so hard it makes a distinct *clink*. It can deliver over 150 amperes on short-circuit.

It will deliver a current of *50 amperes for ninety seconds,* and at the end of that time the voltage is still above 50% of the full-charged no-load value!

Semi-straighten a standard wire paper-clip and clip it from one end of the battery to another—but don't hold on! It will get hot enough to lose most of its spring in a matter of seconds—and the cell won't be bothered in the least.

Repeated discharges at 50 amperes, recharge, and redischarge at that extreme rate, from the little D-cell size Nicad doesn't bother it in the slightest.

A standard lead-acid storage battery drops its voltage to less than 50% of the full rated value—the "6-volt" battery goes below 3.0 volts; the "12-volt" below 6.0—when the full load of the starter hits it. A Jungner battery of equal ampere-hour capacity drops, under the same load,

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only about 10%! If you directly replace a lead-acid battery with a Jungner battery of the same capacity and no-load voltage rating, your starting motor is going to get a surprise. The standard "12-volt system" starter motor has to be designed to work on about 5 volts—which is about what it can get when it's trying to start your car on a cold winter morning. With a Jungner battery, it would get about 10 volts—nearly twice what it's expected to get!

The Ni-Cd is no minor modification of the Edison Ni-Fe battery! It's what the Ni-Fe battery should have been, and never came near to being.

The Nicad battery cell delivers almost exactly the same voltage the Ni-Fe cell does: 1.2 volts. (Which means it takes ten Nicad cells for a "12 volt" battery, instead of the six a lead-acid battery requires.). It uses a nickel electrode, just as the Edison does, and a KOH electrolyte, as the Edison does—but from there on out, the differences are enormous!

The Jungner batteries have been available in Europe since the very early 1900's. Like the Edison battery, they're made of nickle-plated steel, and are mechanically, chemically, and electrically extremely rugged. Unlike Edison cells, they've been used for internal-combustion engine starting right from the beginning—and one Jungner battery put in service starting a diesel engine in 1913 was still in service, as of 1958! A forty-five year service life suggests the things can really be depended on. If a man bought a new Nicad battery for his car the day his son was born, about the time Junior got his PhD., the battery could be expected to need replacement.

Now here is the remarkable thing: the Ni-Cd batteries could be bought in Europe, in Tibet, in Central Africa and in the South Seas Islands all during the first half of the century—but *you couldn't get them in the United States!*

I didn't even find mention of them in technical literature in the United States! As I said, the Chemical Rubber *Handbook* didn't mention their existence.

The Ni-Cd battery, it is now clearly evident, is far and away the most reliable, powerful, long-lived storage battery yet developed. It is the only true, long-lived storage cell that can be truly hermetically sealed.

The Nicad battery actually represents a major new tool for both industry and science.

Yet technical information about it, even, was practically unobtainable in this country, previous to 1945—and became available then primarily because several hundred thousand Americans had been exposed to their wide-spread use in Europe, while over there on other business. An American Army colonel was primarily responsible for founding the Nicad Battery Co., in Easthampton, Mass., after the war, and making the Jungner type cell available in the United States.

The data above certainly makes a magnificent case for a deliberately suppressed invention, doesn't it? Ob-

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viously, the commercial battery companies, with the beautiful lead-acid battery business, combined to prevent development of the Nicad cell? Big Business at work, supressing an invention, and milking the poor citizen? Just think . . . the lead-acid battery business is practically a management ideal dream of a perfect business! The lead-acid battery has automatic, guaranteed built-in self-destruction mechanisms that they can't even be accused of putting in deliberately! It's inherent in the lead-acid system that the battery will destroy itself—because the *stable* form of the lead-sulfuric acid system is $PbSO_4$—and the system inevitably and inescapably goes slowly and steadily to that condition. There's no way of preventing it.

And this means that they can guarantee that the batteries they sell will destroy themselves in two, three or four years—and that the buyer will, with perfect certainty, be back for another battery.

But if he buys a Nicad—that's the last you'll see of him. His son will grow into manhood and buy a battery before *he* comes back!

Obviously Big Business and the Big Battery Cartels were at work, right?

Yeah . . . obviously. Only the obvious happens to be wrong,

Because that wouldn't account for the fact that the Chemical Rubber *Handbook* and all the other books on batteries printed in this country during the last half-century ignored the thing. Technology—professional science—ignored the battery. Naturally in our technical-based culture, Big Business ignored it too. If the Director of Research thinks the device is unimportant—the executive department isn't going to do anything about it.

One of the best over-all discussions of practical battery technology and management available in this country is the book "Storage Batteries", by Dr. George W. Vinal, of the National Bureau of Standards. The third edition of his book appeared in 1940. In it, he devotes about three pages total to references to the Ni-Cd battery; the rest is 80% devoted to lead-acid cells, and 20% to Edison cells. The major technical-data discussion of this authoritative book on storage batteries says of the Jungner battery,

> "Although nickle-cadmium cells are little known in this country, their production in Europe has increased greatly since 1930. They are used for train-lighting, mine lamps, tractors and trucks, military purposes, and, since 1935, for starting and lighting service on buses and trucks. Cadmium is said to be less subject to self-discharge than iron, and is relatively free of passivity at low temperatures. The average voltage of a cell during discharge is about 1.2 volts."

And that's all Dr. Vinal of the Bureau of Standards considered necessary to say about the Ni-Cd battery. Notice that he says "Cadmium is *said to be* less subject to self-discharge". This suggests that, as of 1940, Dr. Vinal, the Bureau of Standards bat-

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tery expert, *had not himself investigated Ni-Cd batteries.* They'd been on the market since about 1905, and by his own statement, in wide, and rapidly increasing use in Europe for ten years before his book was published.

It wasn't Big Business and Cartels that surpressed the Ni-Cd battery in this country; it was Big Science.

If a business organization writes to the National Bureau of Standards for information about some new kind of battery they've heard about being used in Europe—you can imagine the enthusiastic report the Bu. Stan. would send them, in view of the fact that they'd been too lethargic to investigate the matter themselves!

The battery experts "knew" they didn't need to waste time and effort investigating the Ni-Cd system; they knew all about the Edison cell, and therefore, since the Ni-Cd was an unimportant modification of the Edison, they didn't need to investigate it.

They didn't even react to the fact that the Jungner Ni-Cd cells were being used to do work that Edison cells can't possibly do—for starting busses, trucks, and heavy diesel engines!

The Bell Telephone Laboratories had a report worked up by one of their men, about 1947, as to the characteristics of the Nicad batteries. Most of the report had to be prepared from material furnished by the manufacturers, since Bell Labs hadn't had time to investigate the batteries themselves. (After all, they'd been on the market for only 40 years, you know.) At that time, they found that Ni-Cd batteries were very highly desireable for such service as railroad lighting, emergency power and the like in colonial areas; the Ni-Cd cells were the only kind of battery that could remain operating under the mismaintainance provided by completely ignorant native workers. They were liked in India particularly because the Ni-Cd cells could tolerate temperatures that completely ruined lead-acid and Edison batteries—the temperatures reached in the Indian central plains during mid-summer.

It wasn't Big Business Cartels that kept you from getting the possible developments of the Ni-Cd battery—it was the Big Science cartel that already knew they didn't have to investigate.

As a matter of fact, the Jungner battery, sad to say, can never replace the lead-acid battery—but for a reason that *none of the battery experts I've talked to knew about!*

The Ni-Cd system has one permanent, immovable, and absolute block. It can never become a mass-production, high-quantity item. This means, of course, that it will tend to remain expensive, because of hand-tooled construction methods imposed by the small-quantity business.

The reason it can never be a large-scale industry has to do with the peculiar structure of the cadmium nucleus. Cadmium is used as control-rods in nuclear reactors, because the nucleus soaks up neutrons like a sponge . . . and turns into something else, of course. This characteris-

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tic, plus a few others, contribute to the fact that when the atoms were being cooked up in the stellar atom-furnaces, cadmium was one that didn't stand up well.

There is not one cadmium mine on the entire Earth.

Cadmium is strictly a *very* small by-product of zinc mining; it is a minor impurity, about 0.25% on the average, in zinc. It is extracted from zinc quite largely because Cd is highly toxic, while pure zinc is non-toxic. Cadmium, like its conger mercury, is exceedingly bad stuff in human metabolism.

Because of this, the price of cadmium, in moderate quantities, is around $1.70 per pound . . . but if you want a great deal of cadmium, say the quantity needed to make 5,000,000 automobile batteries this year, the price will be about $800 per pound!

Which suggests that Big Business wouldn't have had any reason to suppress the invention anyway!

But the failure of science to appreciate that the Jungner battery was an entirely different kettle of fish is indicated by what has been done, since the interest in batteries, both primary and secondary, has been reawakened.

The electric automobile never got anywhere—despite the apparent advantage it had back around 1905. It was quiet, reliable, smooth, odorless, very cheap to maintain—it had lots of advantages. But the gasoline car, stinking, banging, breaking down, rattling, and in various ways offending nose, ears, and sense of economics, won out—largely because you could "recharge" a gasoline car in minutes, instead of overnight.

And after the gasoline car won—batteries were for toys, doorbell ringing, and flashlights. For a brief time, in the late 1920's, it looked as though radio receivers were going to give batteries a new job—but then they found out how to run those from a powerline too.

The first real new interest in batteries came in WWII, when the development of military electronics began to make portable power supplies important. Long-neglected research programs were dusted off, and work was done on ideas nobody'd bothered with for decades. The mercury dry-cell came into production. Batteries of far smaller size came on the market. Then the transistor arrived, and the market for batteries really boomed.

Photographic electronic flash supplied another market for batteries—and about that time the hermetically sealed Ni-Cd storage battery came on the market. It was the first truely *sealed* storage cell ever sold commercially.

The problem in building a sealed storage cell has always been the danger of gas explosion when the cell is fully charged . . . and the charging current is continued. When all the $Ni(OH)_2$ has been reoxidized to $Ni(OH)_3$, if the charging current continues—oxygen begins bubbling off the anode. When all the cadmium hydroxide has been reduced back to cadmium metal—hydrogen starts

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bubbling off the cathode. If the cell is sealed, the gas pressure will build up steadily until something pops. If the cell is not sealed, the electrolyte tends to escape, no matter how carefully you try to trap it—as anyone who had one of the lead-acid storage battery powered radio sets can tell you.

The Ni-Cd system is unique, in making possible a reaction system that completely eliminates gas-off, even when the cell is overcharged. It depends on the fact that oxygen is somewhat soluble in KOH under moderate pressure—and that the finely divided and highly reactive cadmium metal in the cathode of a Ni-Cd battery will react directly with the dissolved oxygen to produce $Cd(OH)_2$.

The very simple trick is that more cadmium hydroxide is built into the cell than the amount equivalent to he nickel oxide installed. Necessarily, then, the nickel anode will reach full-charge condition while there still remains some unreduced $Cd(OH)_2$. The anode will, then, tend to start producing free oxygen, before the cathode starts freeing hydrogen.

The oxygen freed from the anode, however, attacks the already-reduced cadmium of the cathode, and turns it back to $Cd(OH)_2$. The net result is that the over-charge current is simply consumed harmlessly by the catalytic oxidation-reduction of the Cd-$Cd(OH)_2$ system!

Because of that, the Ni-Cd hermetically sealed cells provided a type of storage cell that could be sent into space—which would have been sudden death to any unsealed cell, since the electrolyte would promptly boil away. And it meant a cell that could be permanently wired into delicate electronic equipment without danger of a spray of corrosive fumes. Hence the development of the rechargeable photo-flash equipment.

But another step was in the offing; since about 1946, the Nicad Battery Company had been working on a new approach to battery plates.

The Edison batteries are decidedly expensive; nickel and iron are cheap enough—but getting the darned stuff in place, in the form it's needed, is an incredibly elaborate process. The positive plate structure in an Edison battery involves making tubes by wrapping nickeled-steel perforated tape around a mandrel, slipping steel retaining rings over the tube so formed, then ramming the tube full of alternate layers of finely divided precipitated nickel hydroxide and fine nickel flake. (The nickel oxide material is a very poor conductor; the nickel flake is added in hopes of improving that situation.) A total of 600 layers of alternate nickel oxide and nickel flake is rammed in, the tube pinched shut, and mounted in a nickeled-steel grid. The cost isn't the materials—it's the cost of getting the darned stuff in the form needed, where you need it.

The original Jungner battery suffered from a similar problem—complicated by the fact that cadmium is expensive. The machinery used to

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make these plates was big, expensive, and specialized—it made it very difficult to produce many different sizes and styles of batteries.

(The lead-acid battery is cheap not because lead and sulfuric acid are so much cheaper, but because it's so easy to make a paste of lead oxide and glycerine, or other organic material, and "butter" a lead grid with the stuff. Charging the resultant pasted plate converts the anode-charged plates to PbO_2, and the cathode-charged plates to Pb. The whole process is cheap, easy, done by simple machinery, and easily altered as to size and thickness.)

The Germans, during WWII, started working on what is now known as the "pressed plate" type battery; it's made essentially of powdered nickel and active material formed under enormous pressure into a quasi-solid button of active and conductive material.

The Nicad Company, meanwhile, was working on the sintered-plate system—a technique using powder-metallurgy to make a "biscuit" of extremely porus nickel by lightly compressing nickel powder, and then, by a sudden heavy current, causing the individual grains to weld to each other at their points of contact. The result is a plate that's 80% open holes, and only 20% solid nickel. By chemical techniques (that they talk *about,* but not *of*) they load the pores with active material—nicklic salts in the anode-to-be, cadmium in the cathode-to-be.

A number of companies are now importing the Ni-Cd batteries from West Germany, and selling them under American brand names; Nicad—which is now a division of the Gould-National Battery Company—imports and sells under their brand a number of the smallest sizes of Ni-Cd batteries. These range from shirt-button size to overcoat-button size—and shape!—in the Nicad brand; Burgess, Eveready, and others offer similar West German made button cells, and some flashlight-type batteries of the pressed-plate type. So far, Nicad is the only make of sintered-plate I've encountered.

The pressed-plate and sintered-plate types are *not* interchangeable-equivalent!

It's a Nicad sintered-plate type of D-size flashlight cell that can throw a current of 150 amperes. The equivalent D-size pressed-plate cell acts exactly like a first-line high-quality drycell, except that it can be recharged several hundred times. A good, fresh, new drycell, on dead short-circuit, will yield about 7 amperes; so will a fresh-charged pressed-plate Ni-Cd D-size cell.

In addition, the sintered-plate cell has a capacity of four ampere hours, as compared to about 2.5 for the sintered plate. However, you *do* pay for the difference—the Nicad sintered-plate cells are more expensive.

But of major importance is this simple fact: The sintered-plate, hermetically sealed Nicad battery is a totally new tool for both industry and science. It will do things that no other device known has been able to do.

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For the first time, battery-powered *tools* are possible—not *toys*, but *tools*. The Black & Decker cordless quarter-inch drill is a full-scale, he-man heavy-work tool, not a battery-operated toy. Four Nicad sintered-plate cells, each D-size in diameter, but only half as high, supply the power. The tool can drill ¼-inch holes through cold-rolled steel; when drilling under full load—a ¼-inch bit clawing its way into hard steel—the drill-motor *draws 55 amperes from the half-D-size cells!*

Naturally, the batteries can't maintain that sort of load for any long period—but the tool can drill about five ¼-inch holes in ¼-inch thick cold-rolled steel on one battery charge. Under more normal loads, it can drill over 100 ½-inch holes in "1-inch" pine boards on a single charge. It's a tool—not a toy! TV service-men, for one group, dearly love the gadget—it'll give them a power-tool up on somebody's roof.

For the first time, there's a chance for real battery-powered tools of all types. And for battery-powered equipment that requires *power*, great gulps of power, where you can't get at a powerline. Sylvania Electric is bringing out a modification of their "Sun Gun" home movie light gadget—the iodine-cycle incandescent lamp—that, for the first time, allows you to take movies at night without having to have a handy powerline outlet. On the beach—at a picnic—anywhere. It has a cannister of Nicad batteries, and supplies half an hour of brilliant light.

But the sintered-place Nicad offers something entirely different in the way of a scientific tool. The definition of the electrical unit, *one farad*, is that capacity which, when charged at a rate of one ampere, shows a voltage increase of one volt per second. By that definition, a penlight size Nicad sintered-plate cell is approximately a one *kilo*farad condenser. I've used them in electronic circuits where a capacitance of the order of 5,000 microfarads would have been the minimum to get the required low-frequency response. Because the Nicad cell can be charged *forever* at up to 20 milliamperes, due to the trick $Cd\text{-}Cd(OH)_2$ reaction with oxygen, they make magnificent fixed-bias devices.

In this application, it represents a class of device that never existed before. A Zenner diode will do a similar job at higher voltage ranges—but not with such exceedingly low impedance.

This aspect as a super-capacitor has application in an entirely different area—on an entirely different end of the scale. More and more interest is developing in the production of ultra-intense magnetic fields—fields requiring enormous currents. Some work has been done by discharging a huge bank of condensers in a single shock blast, developing currents in the range of half a million amperes.

For the fun of it, I calculated what it would take to get a current of 1,000,000 amperes sustained for a full 60 seconds—not as a split-second

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discharge but as a sustained surge of power—from a bank of Nicad sintered-plate cells.

Anyone who happens to want that megampere current can order the necessary cells off-the-shelf from Nicad. They'll all fit in a volume somewhat less than that of a standard office desk. The switching arrangement, however, may be something else again; breaking megampere currents is apt to present some problems.

The type of cell considered here, incidentally, is the standard commercial plastic-cased, hermetically-sealed Nicad sintered-plate heavy-duty cell. The cells are relatively new—only about 5 or 6 years old—so they don't know, yet, how long the cells will last, but they have experience with these cells which were deeply, and very rapidly discharged, recharged, and recycled 2000 times . . . with no loss of capacity.

So little thinking has been done on the nature and possible characteristics of batteries, actually, that many "battery experts" have never happened to consider some of the most fundamental factors of battery design!

For example, I've found that many "experts" haven't noticed that iron is the lightest element that can be plated out of an ordinary water solution of its salts. If it weren't for iron's unfortunate habit of bubbling off hydrogen continuously, it would make iron the lightest possible material for use in a secondary cell cathode. One reason the Edison cell is so light per kilowatt hour!

The only familiar batteries have been drycells and the lead-acid storage battery; all of these have markedly limited life—inherently limited life. The lead reacts with sulfuric acid to form lead sulfate; at first the sulfate is in a microcrystalline form, but with the passage of time, the microcrystals grow into larger, though still invisibly small, crystals that will not reduce back to lead or go to lead dioxide . . . and the battery is useless.

The drycell is, necessarily, a metastable electrochemical system. Since it's a primary cell, it *has* to be unstable, or there could be no energy available for use. Any battery, in its charged state, must be a metastable system.

But because we have been used to the drycell—a perfectly valid primary cell—and the lead-acid storage battery, which is always in one metastable state or another, so long as it *is* a battery, we've grown accustomed to thinking "of course, it's natural for batteries to destroy themselves."

It isn't; it's natural only for primary cells, and badly designed storage cells to destroy themselves. A properly designed storage cell would be an inherently stable chemical system when it was in the discharged state—and a highly metastable system in the charged state.

The Ni-Fe cell *is* completely stable in the discharged state; that's why it can be stored with the plates strapped together for years at a time.

The Ni-Cd system is only slightly less stable in the discharged state; the

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excess cadmium metal can react slightly, very, very slowly with the nickle hydroxide, tending to drive it down from the Ni^{++} state to the Ni^{0} state—and once the nickel is in the metallic state, it will not reoxidize under the conditions of the Jungner cell's anode.

However, where the Ni-Fe cell is perfectly stable discharged, it's not as stable as it should be when charged; the iron reacts steadily with the water to give of hydrogen. You *can't* store a Ni-Fe cell charged, because it self-discharges. The Ni-Cd cell, however, does just what old Jungner wanted—it holds its charge for *years*. A modern Nicad cell will retain over 30% of its charge after two years on the shelf.

The amount of research that has been expended toward getting basically new, and really effective batteries, is indicated by the complete failure of even the National Bureau of Standards to take the effort to make some actual tests on the Jungner batteries during the forty years it was successful in Europe . . . and ignored by American science and technology, because they "knew" it was a minor and unimportant variation of the Edison cell.

It *wasn't* a "minor" difference; it makes possible things the Ni-Fe cell simply can't approach—as those fantastically powerful little Nicad flashlight batteries demonstrate.

The thing that licked the electric car in the early 1900's was that you couldn't recharge it in minutes, as you could the gas car. It was *not* lack of speed; it was at that period that an electric-powered car set that 78 mile-an-hour automobile speed record.

Now, the objection that was raised to the gasoline car at that time is coming home to roost in a *big* way; they stink. Los Angeles, all California, all big cities, are learning that fact. It's called "smog", and it's lethal. Now that more careful medical research has shown that it's not the cigarettes that cause lung cancer, but city smog, California has started passing laws to force gasoline cars to use fume-eliminators.

The Ni-Cd battery can never be a mass-production unit. Cadmium, unfortunately, can't be had! But—it does suggest what batteries could be, if some real, honest, original research was done.

The Ni-Cd sintered plate cells can not only be discharged at fantastically high rates—they can be charged at equally violent rates. One of those sintered-plate cells can be given 80% of a full charge *in four minutes*. For the larger commercial cells, with 150 ampere hour capacity, that means a charge rate of thousands of amperes, at the beginning of the charge.

Here's a battery that doesn't have the characteristic that killed the electric automobiles—it *can* be refilled in minutes, not hours! The old electric cars were designed with the idea that it would have to run all day on one charge; the batteries were heavy, the motors small, and the speed slow. But suppose we have a car designed to run only two hours on a charge, and to pick up a new charge at a

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filling-station in a ten minute stop? A Nicad sintered-cell battery could do it! And man! Talk about hot-rod dragsters! Think of the acceleration-torque that little starter motor in your car develops—and scale that up to a pair of twenty-horse series-wound DC drive motors powered by a battery that's happy to deliver a current of 10,000 amperes or so! And be it remembered that a series-wound DC motor has to be very carefully restrained; they have a natural tendency to accelerate to speeds like 30,000 RPM.

But in grinning contrast to what could be done—the Edison storage battery is now owned by the "Exide" company, and, after half a century, the same design of cells remains. No effective change in half a century. It's a living fossil, embodying ideas of the period when electric power was very new, and modern metallurgical chemistry hadn't been invented.

We *need* electric cars—they're quite literally a matter of life and death. Electric cars that have the git-up-and-go that people want—that can be used for most of the ordinary round-town work that cars are used for. And to get that, we need some decent storage batteries.

It wasn't the Big Business Cartels that kept the Jungner battery out of the United States; they, quite provably, had absolutely nothing to worry about, because of that no-cadmium-mine problem.

It was the Big Science laziness, the failure to take the trouble to look and see—because they "already knew" the Jungner battery was just like the Edison, really.

And it was sheer scientific laziness that kept the Edison battery static for half a century. In some home experiments conducted to find out why the Jungner battery can throw such heavy currents, while the Edison battery is so given to fainting spells, like a belle of its birth era, when faced with a shock load, I found the answer quite simply.

Sheer bad design. The nickel anode has such high resistance, and such poor access to the electrolyte because of the method of filling, that it can't react rapidly. Naturally, I assumed at first that the difference must be that iron wouldn't hold up under heavy current, because after all the Jungner battery uses the same essential anode reactions.

It isn't the fault of the iron; just wrapping some fine grade steel wool around a sheetiron plate gave me a test electrode that was perfectly willing to deliver 15 or 20 amperes in a 400 ml beaker-size plate! It was the inefficient Edison nickel anodes that clobbered the thing.

The high-power, high-rate, lightweight batteries we need for a hundred uses are perfectly possible. They're a real, genuine suppressed invention—but *not* suppressed by what everyone always suggests as the Villains Of The Piece.

It wasn't Wall Street's fault at all—it was Ivory Tower Street.

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COMPARISON OF MAJOR TYPES OF STORAGE CELLS

Characteristic	*Ni-Cd*	*Edison Ni-Fe*	*Lead-Acid*
Weight	Moderate	Low	Heavy
Cost	High	High	Low
Service life	Decades	Decades	Months
Cost/year	Low	Low	High
Voltage/cell	1.2	1.2	2.1
Mechanically rugged?	Yes	Yes	No
Can be hermetically sealed?	Yes	No	No
Availability?*	Difficult	Difficult	Anywhere
Heavy current discharge?	Extremely	No!	Yes
Capacity available under high-rate discharge.	> 80%	< 10%	≤ 40%
Damaged by repeated over-charge?	No.	No.	Ruined
Damaged by repeated over-discharge?	Some loss of capacity	No.	Ruined
Holds charge?	2 years	2 months	2 months
Long storage (years)	Unharmed	Unharmed	Ruined unless dry.
Stand temperatures above 150°F.?	Yes	Damage	Ruined
Temperatures below 0°F.?	—40°	Loss of activity below 32°F.	—60°
Water needs?	Once a year. (Non-sealed type cells.)	Often	Often
Fast recharge?	Extremely fast—no damage.	No!	Moderately fast—some damage.

*The Nicad batteries are available from the Gould-National Battery Co.'s Nicad Division—but most Gould-National battery agents don't know this! You'll have to tell them their company handles them. Or write Gould-National Battery Co., Nicad Division, 7 Dey St., New York City. Edison cells are now manufactured by the "Exide" company, and can be obtained through "Exide" agents . . . . . but most agents don't know that, either!

The flashlight size Nicad sintered-plate cells are getting to be fairly widely available through electronic supply houses. But *note carefully* that not all nickle-cadmium batteries of the sealed flashlight cell design are the super-powerful sintered-plate type; the *pressed-plate* type will not handle currents heavier than about 8-10 amperes maximum.

There's a surplus outfit in the mid-west that is offering government surplus Nicad sintered-plate cells (spillproof but not hermetically sealed).

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Man . . . the real space probe

■ The NASA press releases, and the discussions by various industrial companies, have referred to various complex contraptions of electronic gadgetry as "space probes". Some of the major seminars on space exploration have made major explorations of the possible design of these robot space-probes—and have vigorously rejected the idea that a human observer is worth anything as a space-probe.

That attitude is, of course, consistent with the current scientific philosophy that nothing done by human beings is really good or valuable; only machine-made data or machine-made observations are worth while.

This is being written, however, while the Ranger space-shot is drifting gently past the Moon, having missed its target by some 23,000 miles. Lessee . . . that's only about a 10% error their gadget made, isn't it—a 23,000 mile miss in a 230,000 mile flight.

A machine designed to examine a known system can do a better job than a man, because it *is* a monomanic system; it isn't distracted.

But a machine to explore into the unknown is fundamentally nonsense; to hold that an exploring machine can be built is to insist that we already know everything that can be there to discover.

The rate of actual, experienced failure in technical equipment in space has been so high as to give every evidence that we definitely don't know anywhere near enough about space to devise reliable instruments. The Venus Probe was supposed to have a 150 watt transmitter to send back data from 50,000,000 miles out. Was it twice, or three times the thing worked before it quit completely?

That original Vanguard grapefruit that's still beeping—after a considerable period of silence which wasn't explained—wasn't supposed to keep on beeping. It had a time-switch device built in to cut it off the air after a year, so its signals wouldn't foul up other transmissions.

The original Echo satellite was supposed to last a few months . . . they hoped. It's still circling at last reports.

This indicates it isn't safe to send human beings out? So what? Was it safe for Columbus to set out? Would any insurance company willingly have insured Lewis & Clark, when they set out? I understand that the Oregon Trail, a bit over a century ago, had a rather high death-rate . . , but whole families happily set out on it. Washing windows in skyscrapers had so high an accident rate that insurance companies refused to insure for many years—but the windows got washed.

Eventually, the real space probes will get out there, and Mankind will begin to learn something about deep space. They'll be human, and they'll have a high death-rate at first—but when has any frontier exploration been cheap in lives?

And . . . when have *men* ever refused the challenge? ■

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« *Continued from page 82* »

trol all hyperdrive craft, and all nuclear weapons. I take it you are the sole government on this planet? Then no other will be permitted to compete with you."

"Well, what are they taking away from us, then?" somebody in the rear asked.

"I assume that you are agreed to accept the sovereignty of his Imperial Majesty? Good. As a matter of form, Lord Nikkolon, will you take a vote? His Imperial Majesty would be most gratified if it were unanimous."

Somebody insisted that the question would have to be debated, which meant that everybody would have to make a speech, all two thousand of them. He informed them that there was nothing to debate; they were confronted with an accomplished fact which they must accept. So Nikkolon made a speech, telling them at what a great moment in Adityan history they stood, and concluded by saying:

"I take it that it is the unanimous will of this Convocation that the sovereignty of the Galactic Emperor be acknowledged, and that we, the 'Mastership of Aditya' do here proclaim our loyal allegiance to his Imperial Majesty, Rodrik the Third. Any dissent? Then it is ordered so recorded."

Then he had to make another speech, to inform the representatives of his new sovereign of the fact. Prince Trevannion, in the name of the Emperor, delivered the well-worn

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words of welcome, and Lanze Degbrend got the coronet out of the black velvet bag under his arm and the Imperial Proconsul, Obray, Count Erskyll, was crowned. Erskyll's charge-d'affaires, Sharll Ernanday, produced the scroll of the Imperial Constitution, and Erskyll began to read.

Section One: The universality of the Empire. The absolute powers of the Emperor. The rules of succession. The Emperor also to be Planetary King of Odin.

Section Two: Every planetary government to be sovereign in its own internal affairs . . . Only one sovereign government upon any planet, or within normal-space travel distance . . . . All hyperspace ships, and all nuclear weapons . . . No planetary government shall make war . . . enter into any alliance . . . tax, regulate or restrain interstellar trade or communication . . . Every sapient being shall be equally protected . . .

Then he came to Article Six. He cleared his throat, raised his voice, and read:

"There shall be no chattel-slavery or serfdom anywhere in the Empire; no sapient being, of any race whatsoever, shall be the property of any being but himself."

The Convocation Chamber was silent, like a bomb with a defective fuse, for all of thirty seconds. Then it blew up with a roar. Out of the corner of his eye, he saw the doors slide apart and an airjeep, bristling with machine guns, float in and rise to the ceiling. The first inarticulate roar was followed by a babel of voices, like a tropical cloudburst on a prefab hut. Olvir Nikkolon's mouth was working as he shouted unheard.

He pressed another of the row of buttons on the arm of his chair. Out of the screen-speaker a voice, as loud, by actual sound-meter test, as an anti-vehicle gun, thundered:

"SILENCE!"

Into the shocked stillness which it produced, he spoke, like a schoolmaster who has returned to find his room in an uproar:

"Lord Nikkolon; what is this nonsense? You are Chairman of the Presidium; is this how you keep order here? What is this, a planetary parliament or a spaceport saloon?"

"You tricked us!" Nikkolon accused. "You didn't tell us about that article when we voted. Why, our whole society is based on slavery!"

Other voices joined in:

"That's all right for you people, you have robots . . ."

"Maybe you don't know it, but there are twenty million slaves on this planet . . ."

"Look, you can't free slaves! That's ridiculous. A slave's a *slave!*"

"Who'll do the work? And who would they belong to? They'd have to belong to somebody!"

"What I want to know," Rovard Javasan made himself heard, is, "*how* are you going to free them?"

There was an ancient word, originating in one of the lost languages of Pre-Atomic Terra—*sixtifor.* It meant, the basic, fundamental, question. Rovard Javasan, he suspected, had just asked the sixtifor. Of course, Obray,

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Count Erskyll, Planetary Proconsul of Aditya, didn't realize that. He didn't even know what Javasan meant. Just free them. Commodore Vann Shatrak couldn't see much of a problem, either. He would have answered, Just free them, and then shoot down the first two or three thousand who took it seriously. Jurgen, Prince Trevannion, had no intention whatever of attempting to answer the sixtifor.

"My dear Lord Javasan, that is the problem of the Adityan Mastership. They are your slaves; we have neither the intention nor the right to free them. But let me remind you that slavery is specifically prohibited by the Imperial Constitution; if you do not abolish it immediately, the Empire will be forced to intervene. I believe, toward the last of those audio-visuals, you saw some examples of Imperial intervention."

They had. A few looked apprehensively at the ceiling, as though expecting the hellburners and planet-busters and nega-matter-bombs at any moment. Then one of the members among the benches rose.

"We don't know how we are going to do it, Prince Trevannion," he said. "We will do it, since this is the Empire law, but you will have to tell us how."

"Well, the first thing will have to be an Act of Convocation, outlawing the ownership of one being by another. Set some definite date on which the slaves must all be freed; that need not be too immediate. Then, I would suggest that you set up some agency to handle all the details. And, as soon as you have enacted the abolition of slavery, which should be this afternoon, appoint a committee, say a dozen of you, to confer with Count Erskyll and myself. Say you have your committee aboard the *Empress Eulalie* in six hours. We'll have transportation arranged by then. And let me point out, I hope for the last time, that we discuss matters directly, without intermediaries. We don't want any more slaves, pardon, freedmen, coming aboard to talk for you, as happened yesterday."

Obray, Count Erskyll, was unhappy about it. He did not think that the Lords-Master were to be trusted to abolish slavery; he said so, on the launch, returning to the ship. Jurgen, Prince Trevannion was inclined to agree. He doubted if any of the Lords-Master he had seen were to be trusted, unassisted, to fix a broken mouse-trap.

Line-Commodore Vann Shatrak was also worried. He was wondering how long it would take for Pyairr Ravney to make useful troops out of the newly-surrendered slave soldiers, and where he was going to find contragravity to shift them expeditiously from trouble-spot to trouble-spot. Erskyll thought he was anticipating resistance on the part of the Masters, and for once he approved the use of force. Ordinarily, force was a Bad Thing, but this was a Good Cause, which justified any means.

They entertained the committee from the Convocation for dinner,

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that evening. They came aboard stiffly hostile—most understandably so, under the circumstances—and Prince Trevannion exerted all his copious charm to thaw them out, beginning with the pre-dinner cocktails and continuing through the meal. By the time they retired for coffee and brandy to the parlor where the conference was to be held, the Lords-ex-Masters were almost friendly.

"We've enacted the Emancipation Act," Olvir Nikkolon, who was ex officio chairman of the committee, reported. "Every slave on the planet must be free before the opening of the next Midyear Feasts."

"And when will that be?"

Aditya, he knew, had a three hundred and fifty-eight day year; even if the Midyear Feasts were just past, they were giving themselves very little time. In about a hundred and fifty days, Nikkolon said.

"Good heavens!" Erskyll began, indignantly.

"I should say so, myself," he put in, cutting off anything else the new Proconsul might have said. "You gentlemen are allowing yourselves dangerously little time. A hundred and fifty days will pass quite rapidly, and you have twenty million slaves to deal with. If you start at this moment and work continuously, you'll have a little under a second apiece for each slave."

The Lords-Master looked dismayed. So, he was happy to observe, did Count Erskyll.

"I assume you have some system of slave registration?" he continued.

That was safe. They had a bureaucracy, and bureaucracies tend to have registrations of practically everything.

"Oh, yes, of course," Rovard Javasan assured him. "That's your Management, isn't it, Sesar; Servile Affairs?"

"Yes, we have complete data on every slave on the planet," Sesar Martwynn, the Chief of Servile Management, said. "Of course, I'd have to ask Zhorzh about the details . . ." - Zhorzh was Zhorzh Khouzhik, Martwynn's chief-slave in office.

"At least, he was my chief-slave; now you people have taken him away from me. I don't know what I'm going to do without him. For that matter, I don't know what poor Zhorzh will do, either."

"Have you gentlemen informed your chief-slaves that they are free, yet?"

Nikkolon and Javasan looked at each other. Sesar Martwynn laughed.

"They know," Javasan said. "I must say they are much disturbed."

"Well, reassure them, as soon as you're back at the Citadel," he told them. "Tell them that while they are now free, they need not leave you unless they so desire; that you will provide for them as before."

"You mean, we can keep our chief-slaves?" somebody cried.

"Yes, of course—chief-freedmen, you'll have to call them, now. You'll have to pay them a salary . . ."

"You mean, give them money?" Ranal Valdry, the Lord Provost-Marshal demanded, incredulously. "Pay our own slaves?"

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"You idiot," somebody told him, "they aren't our slaves any more. That's the whole point of this discussion."

"But . . . but how can we pay slaves?" one of the committeemen-at-large asked. "Freedmen, I mean?"

"With money. You do have money, haven't you?"

"Of course we have. What do you think we are, savages?"

"What kind of money?"

Why, money; what did he think? The unit was the star-piece, the stelly. When he asked to see some of it, they were indignant. Nobody carried money; wasn't Masterly. A Master never even touched the stuff; that was what slaves were for. He wanted to know how it was secured, and they didn't know what he meant, and when he tried to explain their incomprehension deepened. It seemed that the Mastership issued money to finance itself, and individual Masters issued money on their personal credit, and it was handled through the Mastership Banks.

"That's Fedrig Daffysan's Management; he isn't here," Rovard Javasan said. "I can't explain it, myself."

And without his chief-slave, Fedrig Daffysan probably would not be able to, either.

"Yes, gentlemen. I understand. You have money. Now, the first thing you will have to do is furnish us with a complete list of all the slave-owners on the planet, and a list of all the slaves held by each. This will be sent back to Odin, and will be the basis for the compensation to be paid for the destruction of your property-rights in these slaves. How much is a slave worth, by the way?"

Nobody knew. Slaves were never sold; it wasn't Masterly to sell one's slaves. It wasn't even heard of.

"Well, we'll arrive at some valuation. Now, as soon as you get back to the Citadel, talk at once to your former chief-slaves, and their immediate subordinates, and explain the situation to them. This can be passed down through administrative freedmen to the workers; you must see to it that it is clearly understood, at all levels, that as long as the freedmen remain at their work they will be provided for and paid, but that if they quit your service they will receive nothing. Do you think you can do that?"

"You mean, give them everything we've been giving them now, and then pay them money?" Ranal Valdry almost howled.

"Oh, no. You pay them a fixed wage. You charge them for everything you give them, and deduct that from their wages. It will mean considerable extra bookkeeping, but outside of that I believe you'll find that things will go along much as they always did."

The Masters had begun to relax, and by the time he was finished all of them were smiling in relief. Count Erskyll, on the other hand, was almost writhing in his chair. It must be horrible to be a brilliant young Proconsul of liberal tendencies and to have to sit mute while a cynical old Ministerial Secretary, vastly one's superior

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in the Imperial Establishment and a distant cousin of the Emperor to boot, calmly bartered away the sacred liberties of twenty million people.

"But would that be legal, under the Imperial Constitution?" Olvir Nikkolon asked.

"I shouldn't have suggested it if it hadn't been. The Constitution only forbids physical ownership of one sapient being by another; it emphatically does not guarantee anyone an unearned livelihood."

The Convocation committee returned to Zeggensburg to start preparing the servile population for freedom, or reasonable facsimile. The chief-slaves would take care of that; each one seemed to have a list of other chief-slaves, and the word would spread from them on an each-one-call-five system. The public announcement would be postponed until the word could be passed out to the upper servile levels. A meeting with the chief-slaves in office of the various Managements was scheduled for the next afternoon.

Count Erskyll chatted with forced affability while the departing committeemen were being seen to the launch that would take them down. When the airlock closed behind them, he drew Prince Trevannion aside out of earshot of their subordinates.

"You know what you're doing?" he raged, in a hoarse whisper. "You're simply substituting peonage for outright slavery!"

"I'd call that something of a step." He motioned Erskyll into one of the small hall-cars, climbed in beside him, and lifted it, starting toward the living-area. "The Convocation has acknowledged the principle that sapient beings should not be property. That's a great deal, for one day."

"But the people will remain in servitude, you know that. The Masters will keep them in debt, and they'll be treated just as brutally . . ."

"Oh, there will be abuses; that's to be expected. This Freedmen's Management, nee Servile Management, will have to take care of that. Better make a memo to talk with this chief-freedman of Martwynn's, what's his name? Zhorzh Khouzhik; that's right, let Zhorzh do it. Employment Practices Code, investigation agency, enforcement. If he can't do the job, that's not our fault. The Empire does not guarantee every planet an honest, intelligent and efficient government; just a single one."

"But . . ."

"It will take two or three generations. At first, the freedmen will be exploited just as they always have been, but in time there will be protests, and disorders, and each time, there will be some small improvement. A society must evolve, Obray. Let these people earn their freedom. Then they will be worthy of it."

"They should have their freedom now."

"This present generation? What do you think freedom means to them? *We don't have to work, any more.* So down tools and let everything stop at once. *We can do anything we want to.* Let's kill the over-

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seer. And: *Anything that belongs to the Masters belongs to us; we're Masters too, now.* No, I think it's better, for the present, to tell them that this freedom business is just a lot of Masterly funny-talk, and that things aren't really being changed at all. It will effect a considerable saving of his Imperial Majesty's ammunition, for one thing."

He dropped Erskyll at his apartment and sent the hall-car back from his own. Lanze Degbrend was waiting for him when he entered.

"Ravney's having trouble. That is the word he used," Degbrend said. In Pyairr Ravney's lexicon, trouble meant shooting. "The news of the Emancipation Act is leaking all over the place. Some of the troops in the north who haven't been disarmed yet are mutinying, and there are slave insurrections in a number of places."

"They think the Masters have forsaken them, and it's every slave for himself." He hadn't expected that to start so soon. "The announcement had better go out as quickly as possible. And I think we're going to have some trouble. You have information-taps into Count Erskyll's numerous staff? Use them as much as you can."

"You think he's going to try to sabotage this employment programme of yours, sir?"

"Oh, he won't think of it in those terms. He'll be preventing me from sabotaging the Emancipation. He doesn't want to wait three generations; he wants to free them at once. Everything has to be at once for six-month-old puppies, six-year-old children, and reformers of any age."

The announcemnet did not go out until nearly noon the next day. In terms comprehensible to any low-grade submoron, it was emphasized that all this meant was that slaves should henceforth be called freedmen, that they could have money just like Lords-Master, and that if they worked faithfully and obeyed orders they would be given everything they were now receiving. Ravney had been shuttling troops about, dealing with the sporadic outbreaks of disorder here and there; many of these had been put down, and the rest died out after the telecast explaining the situation.

In addition, some of Commander Douvrin's intelligence people had discovered that the only source of fissionables and radioactives for the planet was a complex of uranite mines, separation plants, refineries and reaction-plants on the smaller of Aditya's two continents, Austragonia. In spite of other urgent calls on his resources, Ravney landed troops to seize these, and a party of engineers followed them down from the *Empress Eulalie* to make an inspection.

At lunch, Count Erskyll was slightly less intransigeant on the subject of the wage-employment proposals. No doubt some of his advisors had been telling him what would happen if any appreciable number of Aditya's labor-force stopped work suddenly, and the wave of uprisings that had broken out before any public announcement had been made puzzled

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him. He was also concerned about finding a suitable building for a proconsular palace; the business of the Empire on Aditya could not be conducted long from shipboard.

Going down to the Citadel that afternoon, they found the chief-freedmen of the non-functional Chiefs of Management assembled in a large room on the fifth level down. There was a cluster of big tables and communication-screens and wired telephones in the middle, with smaller tables around them, at which freedmen in variously colored gowns sat. The ones at the central tables, a dozen and a half, all wore chief-slaves' white gowns.

Trevannion and Erskyll and Patrique Morvill and Lanze Degbrend joined these; subordinates guided the rest of the party—a couple of Ravney's officers and Erskyll's numerous staff of advisors and specialists—to distribute themselves with their opposite numbers in the Mastership. Everybody on the Adityan side seemed uneasy with these strange hermaphrodite creatures who were neither slaves nor Lords-Master.

"Well, gentlemen," Count Erskyll began, "I suppose you have been informed by your former Lords-Master of how relations between them and you will be in the future?"

"Oh, yes, Lord Proconsul," Khreggor Chmidd replied happily. "Everything will be just as before, except that the Lords-Master will be called Lords-Employer, and the slaves will be called freedmen, and any time they want to starve to death, they can leave their Employers if they wish.

Count Erskyll frowned. That wasn't just exactly what he had hoped Emancipation would mean to these people.

"Nobody seems to understand about this money thing, though," Zhorzh Khouzhik, Sesar Martwynn's chief-freedman said. "My Lord-Master—" He slapped himself across the mouth and said, "Lord-Employer!" five times, rapidly. "My Lord-*Employer* tried to explain it to me, but I don't think he understands very clearly, himself."

"None of them do."

The speaker was a small man with pale eyes and a mouth like a rat-trap; Yakoop Zhannar, chief-freedman to Ranal Valdry, the Provost-Marshal.

"It's really your idea, Prince Trevannion," Erskyll said. "Perhaps you can explain it."

"Oh, it's very simple. You see . . ."

At least, it had seemed simple when he started. Labor was a commodity, which the worker sold and the employer purchased; a "fair wage" was one which enabled both to operate at a profit. Everybody knew that—except here on Aditya. On Aditya, a slave worked because he was a slave, and a Master provided for him because he was a Master, and that was all there was to it. But now, it seemed, there weren't any more Masters, and there weren't any more slaves.

"That's exactly it," he replied, when somebody said as much. "So now, if the slaves, I mean, freedmen,

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want to eat, they have to work to earn money to buy food, and if the Employers want work done, they have to pay people to do it."

"Then why go to all the trouble about the money?" That was an elderly chief-freedman, Mykhyl Eschkhaffar, whose Lord-Employer, Oraze Borztall, was Manager of Public Works. "Before your ships came, the slaves worked for the Masters, and the Masters took care of the slaves, and everybody was content. Why not leave it like that?"

"Because the Galactic Emperor, who is the Lord-Master of these people, says that there must be no more slaves. Don't ask me why," Tchall Hozhet snapped at him. "I don't know, either. But they are here with ships and guns and soldiers; what can we do?"

"That's very close to it," he admitted. "But there is one thing you haven't considered. A slave only gets what his master gives him. But a free worker for pay gets money which he can spend for whatever he wants, and he can save money, and if he finds that he can make more money working for somebody else, he can quit his employer and get a better job."

"We hadn't thought of that," Khreggor Chmidd said. "A slave, even a chief-slave, was never allowed to have money of his own, and if he got hold of any, he couldn't spend it. But now . . ." A glorious vista seemed to open in front of him. "And he can accumulate money. I don't suppose a common worker could, but

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slave . . . Especially a ...e . . ." He slapped his ..., and said, "Freedman!" five ...es.

"Yes, Khreggor." That was Ridgerd Schferts (Fedrig Daffysan; Fiscal Management). "I am sure we could all make quite a lot of money, now that we are freedmen."

Some of them were briefly puzzled; gradually, comprehension dawned. Obray, Count Erskyll, looked distressed; he seemed to be hoping, vainly, that they weren't thinking of what he suspected they were.

"How about the Mastership freedmen?" another asked. "We, here, will be paid by our Lords-Mas- . . . Lords-Employer. But everybody from the green robes down were provided for by the Mastership. Who will pay them, now?"

"Why, the Mastership, of course," Ridgerd Schferts said. "My Management—my Lord-Employer's, I mean —will issue the money to pay them."

"You may need a new printing-press," Lanze Degbrend said. "And an awful lot of paper."

"This planet will need currency acceptable in interstellar trade," Erskyll said.

Everybody looked blankly at him. He changed the subject:

"Mr. Chmidd, could you or Mr. Hozhet tell me what kind of a constitution the Mastership has?"

"You mean, like the paper you read in the Convocation?" Hozhet asked. "Oh, there is nothing at all like that. The former Lords-Master simply ruled."

No. They reigned. This servile *tammanihal*—another ancient Terran word, of uncertain origin—ruled.

"Well, how is the Mastership organized, then?" Erskyll persisted. "How did the Lord Nikkolon get to be Chairman of the Presidium, and the Lord Javasan to be Chief of Administration?"

That was very simple. The Convocation, consisting of the heads of all the Masterly families, actually small clans, numbered about twenty-five hundred. They elected the seven members of the Presidium, who drew lots for the Chairmanship. They served for life. Vacancies were filled by election on nomination of the surviving members. The Presidium appointed the Chiefs of Managements, who also served for life.

At least, it had stability. It was self-perpetuating.

"Does the Convocation make the laws?" Erskyll asked.

Hozhet was perplexed. "*Make* laws, Lord Proconsul? Oh, no. We have laws."

There were planets, here and there through the Empire, where an attitude like that would have been distinctly beneficial; planets with elective parliaments, every member of which felt himself obligated to get as many laws enacted during his term of office as possible.

"But this is dreadful; you *must* have a constitution!" Obray of Erskyll was shocked. "We will have to get one drawn up and adopted."

"We don't know anything about that at all," Khreggor Chmidd admit-

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ted. "This is something new. You will have to help us."

"I certainly will, Mr. Chmidd. Suppose you form a committee—yourself, and Mr. Hozhet, and three or four others; select them among yourselves—and we can get together and talk over what will be needed. And another thing. We'll have to stop calling this the Mastership. There are no more Masters."

"The Employership?" Lanze Degbrend dead-panned.

Erskyll looked at him angrily. "This is something," he told the chief-freedmen, "that should not belong to the Employers alone. It should belong to everybody. Let us call it the Commonwealth. That means something everybody owns in common."

"Something everybody owns, nobody owns," Mykhyl Eschkhaffar objected.

"Oh, no, Mykhyl; it will belong to everybody," Khreggor Chmidd told him earnestly. "But somebody will have to take care of it for everybody. That," he added complacently, "will be you and me and the rest of us here."

"I believe," Yakoop Zhannar said, almost smiling, "that this freedom is going to be a wonderful thing. For us."

"I don't like it!" Mykhyl Eschkhaffar said stubbornly. "Too many new things, and too much changing names. We have to call slaves freedmen; we have to call Lords Master Lords-Employer; we have to call the Management of Servile Affairs the Management for Freedmen. Now we have to call the Mastership this new name, Commonwealth. And all these new things, for which we have no routine procedures and no directives. I wish these people had never heard of this planet."

"That makes at least two of us," Patrique Morvill said, *sotto voce.*

"Well, the planetary constitution can wait just a bit," Prince Trevannion suggested. "We have a great many items on the agenda which must be taken care of immediately. For instance, there's this thing about finding a proconsular palace . . .

A surprising amount of work had been done at the small tables where Erskyll's staff of political and economic and technological experts had been conferring with the subordinate upper-freedmen. It began coming out during the pre-dinner cocktails aboard the *Empress Eulalie,* continued through the meal, and was fully detailed during the formal debriefing session afterward.

Finding a suitable building for the Proconsular Palace would present difficulties. Real estate was not sold on Aditya, any more than slaves were. It was not only un-Masterly but illegal; estates were all entailed and the inalienable property of Masterly families. What was wanted was one of the isolated residential towers in Zeggensburg, far enough from the Citadel to avoid an appearance of too close supervision. The last thing anybody wanted was to establish the Proconsul in the Citadel itself. The

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Management of Business of the Mastership, however, had promised to do something about it. That would mean, no doubt, that the *Empress Eulalie* would be hanging over Zeggensburg, serving as Proconsular Palace, for the next year or so.

The Servile Management, rechristened Freedmen's Management, would undertake to safeguard the rights of the newly emancipated slaves. There would be an Employment Code—Count Erskyll was invited to draw that up—and a force of investigators, and an enforcement agency, under Zhorzh Khouzhik.

One of Commander Douvrin's men, who had been at the Austragonia nuclear-industries establishment, was present and reported:

"Great Ghu, you ought to see that place! They've people working in places I wouldn't send an unshielded robot, and the hospital there is bulging with radiation-sickness cases. The equipment must have been brought here by the Space Vikings. What's left of it is the damnedest mess of goldbergery I ever saw. The whole thing ought to be shut down and completely rebuilt."

Erskyll wanted to know who owned it. The Mastership, he was told.

"That's right," one of his economics men agreed. "Management of Public Works." That would be Mykhyl Eschkhaffar, who had so bitterly objected to the new nomenclature. "If anybody needs fissionables for a power-reactor or radioactives for nuclear-electric conversion, his chief business slave gets what's needed. Furthermore, doesn't even have to sign for it."

"Don't they sell it for revenue?"

"Nifflheim, no! This government doesn't need revenue. This government supports itself by counterfeiting. When the Mastership needs money, they just have Ridgerd Schferts print up another batch. Like everybody else."

"Then the money simply isn't worth anything!" Erskyll was horrified, which was rapidly becoming his normal state.

"Who cares about money, Obray," he said. "Didn't you hear them, last evening? It's un-Masterly to bother about things like money. Of course, everybody owes everybody for everything, but it's all in the family."

"Well, something will have to be done about that!"

That was at least the tenth time he had said that, this evening.

It came practically as a thunderbolt when Khreggor Chmidd screened the ship the next afternoon to report that a Proconsular Palace had been found, and would be ready for occupancy in a day or so. The chief-freedmen of the Management of Business of the Mastership and of the Lord Chief Justiciar had found one, the Elegry Palace, which had been unoccupied except for what he described as a small caretaking staff for years, while two Masterly families disputed inheritance rights and slave lawyers quibbled endlessly before a slave judge. The chief freedman of the Lord Chief Justiciar had simply summoned judge and lawyers into his

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office and ordered them to settle the suit at once. The settlement had consisted of paying both litigants the full value of the building; this came to fifty million stellies apiece. Arbitrarily, the stelly was assigned a value in Imperial crowns of a hundred for one. A million crowns was about what the building would be worth, with contents, on Odin. It would be paid for with a draft on the Imperial Exchequer.

"Well, you have some hard currency on the planet, now," he told Count Erskyll, while they were having a pre-dinner drink together that evening. "I hope it doesn't touch off an inflation, if the term is permissible when applied to Adityan currency."

Erskyll snapped his fingers. "Yes! And there's the money we've been spending for supplies. And when we start compensation payments . . . Excuse me for a moment."

He dashed off, his drink in his hand. After a long interval, he was back, carrying a fresh one he had gotten from a bartending robot en route.

"Well, that's taken care of," he said. "My fiscal man's getting in touch with Ridgerd Schferts; the Elegry heirs will be paid in Adityan stellies, and the Imperial crowns will be held in the Commonwealth Bank, or, better, banked in Asgard, to give Aditya some off-planet credit. And we'll do the same with our other expenditures, and with the slave-compensation. This is going to be wonderful; this planet needs everything in the way of industrial equipment; this is how they're going to get it."

"But, Obray; the compensations are owing to the individual Masters. They should be paid in crowns. You know as well as I do that this hundred-for-one rate is purely a local fiction. On the interstellar exchange, these stellies have a crown value of precisely zero-point-zero."

"You know what would happen if these ci-devant Masters got hold of Imperial crowns," Erskyll said. "They'd only squander them back again for useless imported luxuries. This planet needs a complete modernization, and this is the only way the money to pay for it can be gotten." He was gesturing excitedly with the almost-full glass in his hand; Prince Trevannion stepped back out of the way of the splash he anticipated. "I have no sympathy for these ci-devant Masters. They own every stick and stone and pinch of dust on this planet, as it is. Is that fair?"

"Possibly not. But neither is what you're proposing to do."

Obray, Count Erskyll, couldn't see that. He was proposing to secure the Greatest Good for the Greatest Number, and to Nifflheim with any minorities who happened to be in the way.

The Navy took over the Elegry Palace the next morning, ran up the Imperial Sun and Cogwheel flag, and began transmitting views of its interior up to the *Empress Eulalie.* It was considerably smaller than the Imperial Palace at Asgard on Odin, but room for room the furnishings were

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rather more ornate and expensive. By the next afternoon, the counter-espionage team that had gone down reported the Masterly living quarters clear of pickups, microphones, and other apparatus of servile snooping, of which they had found many. The *Canopus* was recalled from her station over the northern end of the continent and began sending down the proconsulate furnishings stowed aboard, including several hundred domestic robots.

The skeleton caretaking staff Chmidd had mentioned proved to number five hundred.

"What are we going to do about them?" Erskyll wanted to know. "There's a limit to the upkeep allowance for a proconsulate, and we can't pay five hundred useless servants. The chief-freedman, and about a dozen assistants, and a few to operate the robots, when we train them, but five hundred . . . !"

"Let Zhorzh do it," Prince Trevannion suggested. "Isn't that what this Freedmen's Management is for; to find employment for emancipated slaves? Just emancipate them and turn them over to Khouzhik."

Khouzhik promptly placed all of them on the payroll of his Management. Khouzhik was having his hands full. He had all his top mathematical experts, some of whom even understood the use of the slide-rule, trying to work up a scale of wages. Erskyll loaned him a few of his staff. None of the ideas any of them developed proved workable. Khouzhik had also organized a corps of investigators, and he was beginning to annex the private guard-companies of the Lords-ex-Master, whom he was organizing into a police force.

The nuclear works on Austragonia were closed down. Mykhyl Eschkhaffar ordered a programme of rationing and priorities to conserve the stock of plutonium and radioactive isotopes on hand, and he decided that henceforth nuclear-energy materials would be sold instead of furnished freely. He simply found out what the market quotations on Odin were, translated that into stellies, and adopted it. This was just a base price; there would have to be bribes for priority allocations, rakeoffs for the under-freedmen, and graft for the business-freedmen of the Lords-ex-Masters who bought the stuff. The latter were completely unconcerned; none of them even knew about it.

The Convocation adjourned until the next regular session, at the Mid-year Feasts, an eight-day intercalary period which permitted dividing the 358-day Adityan year into ten months of thirty-five days each. Count Erskyll was satisfied to see them go. He was working on a constitution for the Commonwealth of Aditya, and was making very little progress with it.

"It's one of these elaborate check-and-balance things," Lanze Degbrend reported. "To begin with, it was the constitution of Aton, with an elective president substituted for a hereditary king. Of course, there are a lot of added gadgets; Atonian Radical Democrat stuff. Chmidd and Hozhet and

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the other chief-slaves don't like it, either."

"Slap your mouth and say, 'Freedmen,' five times."

"Nuts," his subordinate retorted insubordinately. "I know a slave when I see one. A slave is a slave, with or without a gorget; if he doesn't wear it around his neck, he has it tattoed on his soul. It takes at least three generations to rub it off."

"I could wish that Count Erskyll . . ." he began. "What else is our Proconsul doing?"

"Well, I'm afraid he's trying to set up some kind of a scheme for the complete nationalization of all farms, factories, transport facilities, and other means of production and distribution," Degbrend said.

"He's not going to try to do that himself, is he?" He was, he discovered, speaking sharply, and modified his tone. "He won't do it with Imperial authority, or with Imperial troops. Not as long as I'm here. And when we go back to Odin, I'll see to it that Vann Shatrak understands that."

"Oh, no. The Commonwealth of Aditya will do that," Degbrend said. "Chmidd and Hozhet and Yakoop Zhannar and Zhorzh Khouzhik and the rest of them, that is. He wants it done legitimately and legally. That means, he'll have to wait till the Midyear Feasts, when the Convocation assembles, and he can get his constitution enacted. If he can get it written by then."

Vann Shatrak sent two of the destroyers off to explore the moons of Aditya, of which there were two. The outer moon, Aditya-*Ba'*, was an irregular chunk of rock fifty miles in diameter, barely visible to the naked eye. The inner, Aditya-*Alif*, however, was an eight-hundred-mile sphere; it had once been the planetary ship-station and shipyard-base. It seemed to have been abandoned when the Adityan technology and economy had begun sagging under the weight of the slave system. Most of the installations remained, badly run down but repairable. Shatrak transferred as many of his technicians as he could spare to the *Mizar* and sent her to recondition the shipyard and render the underground city inhabitable again, so that the satellite could be used as a base for his ships. He decided, then, to send the *Irma* back to Odin with reports of the annexation of Aditya, a proposal that Aditya-*Alif* be made a permanent Imperial naval-base, and a request for more troops.

Prince Trevannion taped up his own reports, describing the general situation on the newly annexed planet, and doing nothing to minimize the problems facing its Proconsul.

"Count Erskyll" he finished, "is doing the best possible under circumstances from which I myself would feel inclined to shrink. If not carried to excess, perhaps youthful idealism is not without value in Empire statecraft. I understand that Commodore Shatrak, who is also coping with some very trying problems, is requesting troop reenforcements. I believe this request amply justified, and would recommend that they be

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gotten here as speedily as possible.

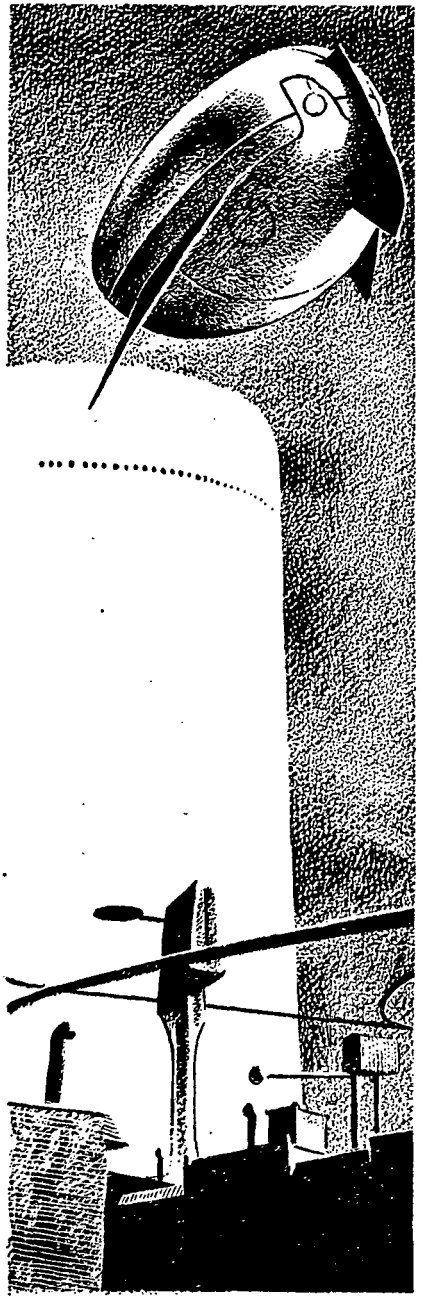
"I understand that he is also recommending a permanent naval base on the larger of this planet's two satellites. This I also endorse unreservedly. It would have a most salutory effect on the local government. I would further recommend that Commodore Shatrak be placed in command of it, with suitable promotion, which he has long ago earned."

Erskyll was surprised that he was not himself returning to Odin on the destroyer, and evidently disturbed. He mentioned it during pre-dinner cocktails that evening.

"I know, my own work here is finished; was the moment the Convocation voted acknowledgment of Imperial rule." Prince Trevannion replied. "I would like to stay on for the Midyear Feasts, though. The Convocation will vote on your constitution, and I would like to be able to report their action to the Prime Minister. How is it progressing, by the way?"

"Well, we have a rough draft. I don't care much for it, myself, but Citizen Hozhet and Citizen Chmidd and Citizen Zhannar and the others are most enthusiastic, and, after all, they are the ones who will have to operate under it."

The Masterly estates would be the representative units; from each, the freedmen would elect representatives to regional elective councils, and these in turn would elect representatives to a central electoral council which would elect a Supreme People's Legislative Council. This would



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not only function as the legislative body, but would also elect a Manager-in-Chief, who would appoint the Chiefs of Management, who, in turn, would appoint their own subordinates.

"I don't like it, myself," Erskyll said. "It's not democratic enough. There should be a direct vote by the people. Well," he grudged, "I suppose it will take a little time for them to learn democracy." This was the first time he had come out and admitted that. "There is to be a Constituent Convention in five years, to draw up a new constitution."

"How about the Convocation? You don't expect them to vote themselves out of existence, do you?"

"Oh, we're keeping the Convocation, in the present constitution, but they won't have any power. Five years from now, we'll be rid of them entirely. Look here; you're not going to work against this, are you? You won't advise these ci-devant Lords-Master to vote against it, when it comes up?"

"Certainly not. I think your constitution—Khreggor Chmidd's and Tchall Hozhet's, to be exact—will be nothing short of a political disaster, but it will insure some political stability, which is all that matters from the Imperial point of view. An Empire statesman must always guard against sympathizing with local factions and interests, and I can think of no planet on which I could be safer from any such temptation. If these Lords-Master want to vote their throats cut, and the slaves want to re-enslave themselves, they may all do so with my complete blessing."

If he had been at all given to dramatic gestures he would then have sent for water and washed his hands.

Metaphorically, he did so at that moment; thereafter his interest in Adityan affairs was that of a spectator at a boring and stupid show, watching only because there is nothing else to watch, and wishing that it had been possible to have returned to Odin on the *Irma*. The Prime Minister, however, was entitled to a full and impartial report, which he would scarcely get from Count Erskyll, on this new jewel in the Imperial Crown. To be able to furnish that, he would have to remain until the Midyear Feasts, when the Convocation would act on the new constitution. Whether the constitution was adopted or rejected was, in itself, unimportant; in either case, Aditya would have a government recognizable as such by the Empire, which was already recognizing some fairly unlikely-looking governments. In either case, too, Aditya would make nobody on any other planet any trouble. It wouldn't have, at least for a long time, even if it had been left unannexed, but no planet inhabited by Terro-humans could be trusted to remain permanently peaceful and isolated. There is a spark of aggressive ambition in every Terro-human people, no matter how debased, which may smoulder for centuries or even millennia and then burst,

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fanned by some random wind, into flame. To shift the metaphor slightly, the Empire could afford to leave no unwatched pots around to boil over unexpectedly.

Occasionally, he did warn young Erskyll of the dangers of overwork and emotional over-involvement. Each time, the Proconsul would pour out some tale of bickering and rivalry among the chief-freedmen of the Managements. Citizen Khouzhik and Citizen Eschkhaffar—they were all calling each other Citizen, now—were contesting overlapping jurisdictions. Khouzhik wanted to change the name of his Management—he no longer bothered mentioning Sesar Martwynn—to Labor and Industry. To this, Mykhyl Eschkhaffar objected vehemently; any Industry that was going to be managed would be managed by his—Oraze Borztall was similarly left unmentioned—management of Public Works. And they were also feuding about the robotic and remote-controlled equipment that had been sent down from the *Empress Eulalie* to the Austragonia nuclear-power works.

Khouzhik was also in controversy with Yakoop Zhannar, who was already calling himself People's Provost-Marshal. Khouzhik had taken over all the private armed-guards on the Masterly farms and in the factories, and assimilated them into something he was calling the People's Labor Police, ostensibly to enforce the new Code of Employment Practice. Zhannar insisted that they should be under his Management; when Chmidd and Hozhet supported Khouzhik, he began clamoring for the return of the regular army to his control.

Commodore Shatrak was more than glad to get rid of the Adityan army, and so was Pyairr Ravney, who was in immediate command of them. The Adityans didn't care one way or the other. Zhannar was delighted, and so were Chmidd and Hozhet. So, oddly, was Zhorzh Khouzhik. At the same time, the state of martial law proclaimed on the day of the landing was terminated.

The days slipped by. There were entertainments at the new Proconsular Palace for the Masterly residents of Zeggensburg, and Erskyll and his staff were entertained at Masterly palaces. The latter affairs pained Prince Trevannion excessively—hours on end of gorging uninspired cooking and guzzling too-sweet wine and watching ex-slave performers whose acts were either brutal or obscene and frequently both, and, more unforgivable, stupidly so. The Masterly conversation was simply stupid.

He borrowed a reconn-car from Ravney; he and Lanze Degbrend and, usually, one or another of Ravney's young officers, took long trips of exploration. They fished in mountain streams, and hunted the small deerlike game, and he found himself enjoying these excursions more than anything he had done in recent years; certainly anything since Aditya had come into the viewscreens of the *Empress Eulalie*. Once in a while, they claimed and received Masterly

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hospitality at some large farming estate. They were always greeted with fulsome cordiality, and there was always surprise that persons of their rank and consequence should travel unaccompanied by a retinue of servants.

He found things the same wherever he stopped. None of the farms were producing more than a quarter of the potential yield per acre, and all depleting the soil outrageously. Ten slaves—he didn't bother to think of them as freedmen—doing the work of one, and a hundred of them taking all day to do what one robot would have done before noon. White-gowned chief-slaves lording it over green and orange gowned supervisors and clerks; overseers still carrying and frequently using whips and knouts and sandbag flails.

Once or twice, when a Masterly back was turned, he caught a look of murderous hatred flickering into the eyes of some upper-slave. Once or twice, when a Master thought his was turned, he caught the same look in Masterly eyes, directed at him or at Lanze.

The Midyear Feasts approached; each time he returned to the city he found more excitement as preparations went on. Mykhyl Eschkhaffar's Management of Public Works was giving top priority to redecorating the Convocation Chamber and the lounges and dining-rooms around it in which the Masters would relax during recesses. More and more Masterly families flocked in from outlying estates, with contragravity-flotillas and retinues of attendants, to be entertained at the city palaces. There were more and gaudier banquets and balls and entertainments. By the time the Feasts began, every Masterly man, woman and child would be in the city.

There were long columns of military contragravity coming in, too; troop-carriers and combat-vehicles. Yakoop Zhannar was bringing in all his newly recovered army, and Zhorzh Khouzhik his newly organized People's Labor Police. Vann Shatrak, who was now commanding his battle-line unit by screen from the Proconsular Palace, began fretting.

"I wish I hadn't been in such a hurry to terminate martial rule," he said, once. "And I wish Pyairr hadn't been so confoundedly efficient in retraining those troops. That may cost us a few extra casualties, before we're through."

Count Erskyll laughed at his worries.

"It's just this rivalry between Citizen Khouzhik and Citizen Zhannar," he said, "They're like a couple of ci-devant Lords-Master competing to give more extravagant feasts. Zhannar's going to hold a review of his troops, and of course, Khouzhik intends to hold a review of his police. That's all there is to it."

"Well, just the same, I wish some reenforcements would get here from Odin," Shatrak said.

Erskyll was busy, in the days before the Midyear Feasts, either conferring at the Citadel with the ex-slaves who were the functional heads

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of the Managements or at the Proconsular Palace with Hozhet and Chmidd and the chief-freedmen of the influential Convocation leaders and Presidium members. Everybody was extremely optimistic about the constitution.

He couldn't quite understand the optimism, himself.

"If I were one of these Lords-Master, I wouldn't even consider the thing," he told Erskyll. "I know, they're stupid, but I can't believe they're stupid enough to commit suicide, and that's what this amounts to."

"Yes, it does," Erskyll agreed, cheerfully. "As soon as they enact it, they'll be of no more consequence than the Assemblage of Peers on Aton; they'll have no voice in the operation of the Commonwealth, and none in the new constitution that will be drawn up five years from now. And that will be the end of them. All the big estates, and the factories and mines and contragravity-ship lines will be nationalized."

"And they'll have nothing at all, except a hamper-full of repudiated paper stellies," he finished. "That's what I mean. What makes you think they'll be willing to vote for that?"

"They don't know they're voting for it. They'll think they're voting to keep control of the Mastership. People like Olvir Nikkolon and Rovard Javasan and Ranal Valdry and Sesar Martwynn think they still own their chief-freedmen; they think Hozhet and Chmidd and Zhannar and Khouzhik will do exactly what they tell them. And they believe anything the Hozhets and Chmidds and Zhannars tell them. And every chief-freedman is telling his Lord-Employer that the only way they can keep control is by adopting the constitution; that they can control the elections on their estates, and handpick the People's Legislative Council. I tell you, Prince Trevannion, the constituion is as good as enacted."

Two days before the opening of the Convocation, the *Irma* came into radio-range, five light-hours away, and began transmitting in taped matter at sixty-speed. Erskyll's report and his own acknowledged; a routine "well done" for the successful annexation. Commendation for Shatrak's handling of the landing operation. Orders to take over Aditya-*Alif* and begin construction of a permanent naval base. Notification of promotion to base-admiral, and blank commission as line-commodore; that would be Patrique Morvill. And advice that one transport-cruiser, *Algol,* with an Army contragravity brigade aboard, and two engineering ships, would leave Odin for Aditya in fifteen days. The last two words erased much of the new base-admiral's pleasure.

"Fifteen days, great Ghu! And those tubs won't make near the speed of *Irma,* getting here. We'll be lucky to see them in twenty. And Beelzebub only knows what'll be going on here then."

Four times, the big screen failed to respond. They were all crowded

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into one of the executive conference-rooms at the Proconsular Palace, the batteries of communication and recording equipment incongruously functional among the gold-encrusted luxury of the original Masterly furnishings. Shatrak swore.

"Andrey, I thought your people had planted those pickups where they couldn't be found," he said to Commander Douvrin.

"There is no such place, sir," the intelligence officer replied. "Just places where things are hard to find."

"Did you mention our pickups to Chmidd or Hozhet or any of the rest of the shaveheads?" Shatrak asked Erskyll.

"No. I didn't even know where they were. And it was the freedmen who found them," Erskyll said. "I don't know why they wouldn't want us looking in."

Lanze Degbrend, at the screen, twisted the dial again, and this time the screen flickered and cleared, and they were looking into the Convocation Chamber from the extreme rear, above the double doors. Far away, in front, Olvir Nikkolon was rising behind the gold and onyx bench, and from the speaker the call bell tolled slowly, and the buzz of over two thousand whispering voices diminished. Nikkolon began to speak:

"Seven and a half centuries ago, our fathers went forth from Morglay to plant upon this planet a new banner . . ."

It was evidently a set speech, one he had recited year after year, and every Lord Chairman of the Presidium before him. The splendid traditions. The glories of the Masterly race. The all-conquering Space Vikings. The proud heritage of the Sword-Worlds. Lanze was fiddling with the control knobs, stepping up magnification and focusing on the speaker's head and shoulders. Then everybody laughed; Nikkolon had a small plug in one ear, with a fine wire running down to vanish under his collar. Degbrend brought back the full view of the Convocation Chamber.

Nikkolon went on and on. Vann Shatrak summoned a robot to furnish him with a cold beer and another cigar. Erskyll was drumming an impatient devil's tattoo with his fingernails on the gold-encrusted table in front of him. Lanze Degbrend began interpolating sarcastic comments. And finally, Pyairr Ravney, who came from Lugaluru, reverted to the idiom of his planet's favorite sport:

"Come on, come on; turn out the bull! What's the matter, is the gate stuck?"

If so, it came quickly unstuck, and the bull emerged, pawing and snorting.

"This year, other conquerors have come to Aditya, here to plant another banner, the Sun and Cogwheel of the Galactic Empire, and I blush to say it, we are as helpless against these conquerors as were the miserable barbarians and their wretched serfs whom our fathers conquered seven hundred and sixty-two years ago, whose descendants, until this

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black day, had been our slaves."

He continued, his voice growing more impassioned and more belligerant. Count Erskyll fidgeted. This wasn't the way the Chmidd-Hozhet Constitution ought to be introduced.

"So, perforce, we accepted the sovereignty of this alien Empire. We are now the subjects of his Imperial Majesty, Rodrik III. We must govern Aditya subject to the Imperial Constitution." (Groans, boos; catcalls, if the Adityan equivalent of cats made noises like that.) "At one stroke, this Constitution has abolished our peculiar institution, upon which is based our entire social structure. This I know. But this same Imperial Constitution is a collapsium-strong shielding; let me call your attention to Article One, Section Two: *Every Empire planet shall be self-governed as to its own affairs, in the manner of its own choice and without interference.* Mark this well, for it is our guarantee that this government, of the Masters, by the Masters, and for the Masters, shall not perish from Aditya." (Prolonged cheering.)

"Now, these arrogant conquerors have overstepped their own supreme law. They have written for this Mastership a constitution, designed for the sole purpose of accomplishing the liquidation of the Masterly class and race. They have endeavored to force this planetary constitution upon us by threats of force, and by a shameful attempt to pervert the fidelity of our chief-slaves—I will not insult these loyal servitors with this disgusting new name, freedmen—so that we might, a second time, be tricked into voting assent to our own undoing. But in this, they have failed. Our chief-slaves have warned us of the trap concealed in this constitution written by the Proconsul, Count Erskyll. My faithful Tchall Hozhet has shown me all the pitfalls in this infamous document . . ."

Obray, Count Erskyll, was staring in dismay at the screen. Then he began cursing blasphemously, the first time he had ever been heard to do so, and, as he was at least nominally a Pantheist, this meant blaspheming the entire infinite universe.

"The rats! The dirty treacherous rats! We came here to help them, and look; they've betrayed us . . . !" He lost his voice in a wheezing sob, and then asked: "Why did they do it? Do they want to go on being slaves?"

Perhaps they did. It wasn't for love of their Lords-Master; he was sure of that. Even from the beginning, they had found it impossible to disguise their contempt . . .

Then he saw Olvir Nikkolon stop short and thrust out his arm, pointing directly below the pickup, and as he watched, something green-gray, a remote-control contragravity lorry,

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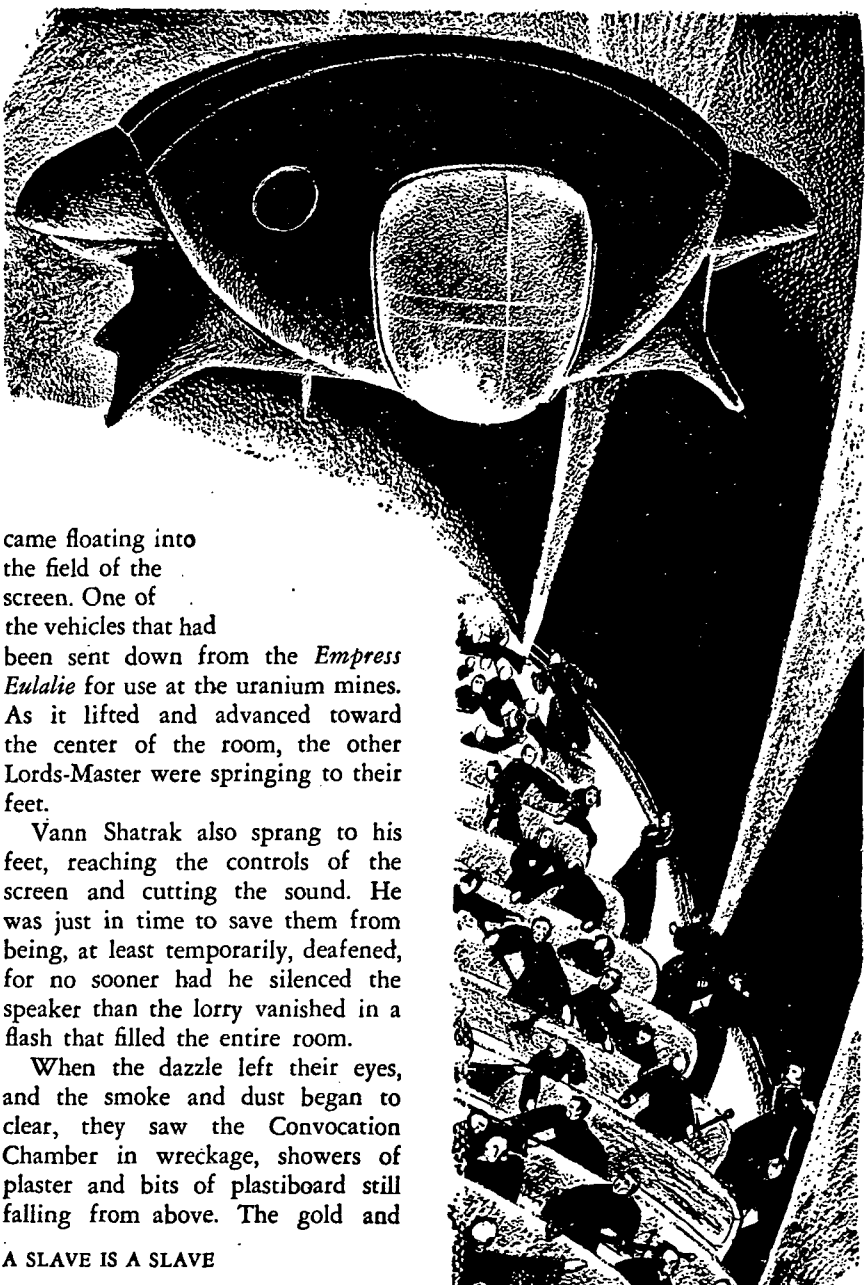

came floating into the field of the screen. One of the vehicles that had been sent down from the *Empress Eulalie* for use at the uranium mines. As it lifted and advanced toward the center of the room, the other Lords-Master were springing to their feet.

Vann Shatrak also sprang to his feet, reaching the controls of the screen and cutting the sound. He was just in time to save them from being, at least temporarily, deafened, for no sooner had he silenced the speaker than the lorry vanished in a flash that filled the entire room.

When the dazzle left their eyes, and the smoke and dust began to clear, they saw the Convocation Chamber in wreckage, showers of plaster and bits of plastiboard still falling from above. The gold and

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onyx bench was broken in a number of places; the Chiefs of Management in front of it, and the Presidium above, had vanished. Among the benches lay black-clad bodies, a few still moving. Smoke rose from burning clothing. Admiral Shatrak put on the sound again; from the screen came screams and cries of pain and fright.

Then the doors on the two long sides opened, and red-brown uniforms appeared. The soldiers advanced into the Chamber, unslinging rifles and submachine guns. Unheeding the still falling plaster, they moved forward, firing as they came. A few of them slung their firearms and picked up Masterly dress swords, using them to finish the wounded among the benches. The screams grew fewer, and then stopped.

Count Erskyll sat frozen, staring white-faced and horror-sick into the screen. Some of the others had begun to recover and were babbling excitedly. Vann Shatrak was at a communication-screen, talking to Commodore Patrique Morvill, aboard the *Empress Eulalie*:

"All the Landing-Troops, and all the crewmen you can spare and arm. And every vehicle you have. This is only the start of it; there'll be a general massacre of Masters next. I don't doubt it's started already."

At another screen, Pyairr Ravney was saying, to the officer of the day of the Palace Guard: "No, there's no telling what they'll do next. Whatever it is, be ready for it ten minutes ago."

He stubbed out his cigarette and rose, and as he did, Erskyll came out of his daze and onto his feet.

"Commodore Shatrak! I mean, Admiral," he corrected himself. "We must re-impose martial rule. I wish I'd never talked you into terminating it. Look at that!" He pointed at the screen; big dump-lorries were already coming in the doors under the pickup, with a mob of gowned civil-service people crowding in under them. They and the soldiers began dragging bodies out from among the seats to be loaded and hauled away. "There's the planetary government, murdered to the last man!"

"I'm afraid we can't do anything like that," he said. "This seems to be a simple transfer of power by *coup-detat;* rather more extreme than usual, but normal political practice on this sort of planet. The Empire has no right to interfere."

Erskyll turned on him indignantly. "But it's mass murder!"

"It's an accomplished fact. Whoever ordered this, Citizen Chmidd and Citizen Hozhet and Citizen Zhannar and the rest of your good democratic citizens, are now the planetary government of Aditya. As long as they don't attack us, or repudiate the sovereignty of the Emperor, you'll have to recognize them as such."

"A bloody-handed gang of murderers; recognize them?"

"All governments have a little blood here and there on their hands; you've seen this by screen instead of reading about it in a history book,

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but that shouldn't make any difference. And you've said, yourself, that the Masters would have to be eliminated. You've told Chmidd and Hozhet and the others that, repeatedly. Of course, you meant legally, by constitutional and democratic means, but that seemed just a bit too tedious to them. They had them all together in one room, where they could be eliminated easily, and . . . Lanze; see if you can get anything on the Citadel telecast."

Degbrend put on another communication-screen and fiddled for a moment. What came on was a view, from another angle, of the Convocation Chamber. A voice was saying:

". . . not one left alive. The People's Labor Police, acting on orders of People's Manager of Labor Zhorzh Khouzhik and People's Provost-Marshal Yakoop Zhannar, are now eliminating the rest of the ci-devant Masterly class, all of whom are here in Zeggensburg. The people are directed to cooperate; kill them all, men, women and children. We must allow none of these foul exploiters of the people live to see today's sun go down . . ."

"You mean, we sit here while those animals butcher women and children?" Shatrak demanded, looking from the Proconsul to the Ministerial Secretary. "Well, by Ghu, I won't! If I have to face a court for it, all well and good, but . . ."

"You won't, Admiral. I seem to recall, some years ago, a Commodore Hastings, who got a baronetcy for stopping a pogrom on Anath . . ."

"And broadcast an announcement that any of the Masterly class may find asylum here at the Proconsular Palace. They're political fugitives; scores of precedents for that," Erskyll added.

Shatrak was back at the screen to the *Empress Eulalie.*

"Patrique, get a jam-beam focussed on that telecast station at the Citadel; get it off the air. Then broadcast on the same wavelength; announce that anybody claiming sanctuary at the Proconsular Palace will be taken in and protected. And start getting troops down, and all the spacemen you can spare."

At the same time, Ravney was saying, into his own screen:

"Plan Four, Variation H-3; this is a rescue operation. This is not, repeat, underscore, *not* an intervention in planetary government. You are to protect members of the Masterly class in danger from mob violence. That's anybody with hair on his head. Stay away from the Citadel; the ones there are all dead. Start with the four buildings closest to us, and get them cleared out. If the shaveheads give you any trouble, don't argue with them, just shoot them . . ."

Erskyll, after his brief moment of decisiveness, was staring at the screen to the Convocation Chamber, where bodies were still being heaved into the lorries like black sacks of grain. Lanze Degbrend summoned a robot, had it pour a highball, and gave it to the Proconsul.

"Go ahead, Count Erskyll; drink it down. Medicinal," he was saying.

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"Believe me you certainly need it."

Erskyll gulped it down. "I think I could use another, if you please," he said, handing the glass back to Lanze. "And a cigarette." After he had tasted his second drink and puffed on the cigarette, he said: "I was so proud. I thought they were learning democracy."

"We don't, any of us, have too much to be proud about," Degbrend told him. "They must have been planning and preparing this for a couple of months, and we never caught a whisper of it."

That was correct. They had deluded Erskyll into thinking that they were going to let the Masters vote themselves out of power and set up a representative government. They had deluded the Masters into believing that they were in favor of the *status quo,* and opposed to Erkyll's democratization and socialization. There must be only a few of them in the conspiracy. Chmidd and Hozhet and Zhannar and Khouzhik and Schferts and the rest of the Citadel chief-slave clique. Among them, they controlled all the armed force. The bickering and rivalries must have been part of the camouflage. He supposed that a few of the upper army commanders had been in on it, too.

A communication-screen began making noises. Somebody flipped the switch, and Khreggor Chmidd appeared in it. Erskyll swore softly, and went to face the screen-image of the elephantine ex-slave of the ex-Lord Master, the late Rovard Javasan.

"Citizen Proconsul; why is our telecast station, which is vitally needed to give information to the people, jammed off the air, and why are you broadcasting, on our wavelength, advice to the criminals of the ci-devant Masterly class to take refuge in your Proconsular Palace from the just vengeance of the outraged victims of their century-long exploitation?" he began. "This is a flagrant violation of the Imperial Constitution; our Emperor will not be pleased at this unjustified intervention in the affairs, and this interference with the planetary authority, of the People's Commonwealth of Aditya!"

Obray of Erskyll must have realized, for the first time, that he was still holding a highball glass in one hand and a cigarette in the other. He flung both of them away.

"If the Imperial troops we are sending into the city to rescue women and children in danger from your hoodlums meet with the least resistance, you won't be in a position to find out what his Majesty thinks about it, because Admiral Shatrak will have you and your accomplices shot in the Convocation Chamber, where you massacred the legitimate government of this planet," he barked.

So the real Obray, Count Erskyll, had at last emerged. All the liberalism and socialism and egalitarianism, all the Helping-Hand, Torch-of-Democracy, idealism, was merely a surface stucco applied at the university during the last six years. For twenty-four years before that, from

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the day of his birth, he had been taught, by his parents, his nurse, his governess, his tutors, what it meant to be an Erskyll of Aton and a grandson of Errol, Duke of Yorvoy. As he watched Khreggor Chmidd in the screen, he grew angrier, if possible.

"Do you know what you bloodthirsty imbeciles have done?" he demanded. "You have just murdered, along with two thousand men, some five billion crowns, the money needed to finance all these fine modernization and industrialization plans. Or are you crazy enough to think that the Empire is going to indemnify you for being emancipated and pay that money over to you?"

"But, Citizen Proconsul . . ."

"And don't call me Citizen Proconsul! I am a noble of the Galactic Empire, and on this pigpen of a planet I represent his Imperial Majesty. You will respect, and address, me accordingly."

Khreggor Chmidd no longer wore the gorget of servility, but, as Lanze Degbrend had once remarked, it was still tattooed on his soul. He gulped.

"Y-yes, Lord-Master Proconsul!"

They were together again in the big conference-room, which Vann Shatrak had been using, through the day, as an extemporised Battle-Control. They slumped wearily in chairs; they smoked and drank coffee; they anxiously looked from viewscreen to viewscreen, wondering when, and how soon, the trouble would break out again. It was dark, outside, now. Floodlights threw a white dazzle from the top of the Proconsular Palace and from the tops of the four buildings around it that Imperial troops had cleared and occupied, and from contragravity vehicles above. There was light and activity at the Citadel, and in the Servile City to the south-east; the rest of Zeggensburg was dark and quiet.

"I don't think we'll have any more trouble," Admiral Shatrak was saying. "They won't be fools enough to attack us here, and all the Masters are dead, except for the ones we're sheltering."

"How many did we save?" Count Erskyll asked.

Eight hundred odd, Shatrak told him. Erskyll caught his breath.

"So few! Why, there were almost twelve thousand of them in the city this morning."

"I'm surprised we saved so many," Lanze Degbrend said. He still wore combat coveralls, and a pistol-belt lay beside his chair. "Most of them were killed in the first hour."

And that had been before the landing-craft from the ships had gotten down, and there had only been seven hundred men and forty vehicles available. He had gone out with them, himself; it had been the first time he had worn battle-dress and helmet or carried a weapon except for sport in almost thirty years. It had been an ugly, bloody, business; one he wanted to forget as speedily as possible. There had been times, after seeing the mutilated bodies of Masterly women and children, when he had been forced to remind himself that he had come out to prevent, not

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to participate in, a massacre. Some of Ravney's men hadn't even tried. Atrocity has a horrible facility for begetting atrocity.

"What'll we do with them?" Erskyll asked. "We can't turn them loose; they'd all be murdered in a matter of hours, and in any case, they'd have nowhere to go. The Commonwealth,"—he pronounced the name he had himself selected as though it were an obscenity—"has nationalized all the Masterly property."

That had been announced almost as soon as the Citadel telecast-station had been unjammed, and shortly thereafter they had begun encountering bodies of Yakoop Zhannar's soldiers and Zhorzh Khouzhik's police who had been sent out to stop looting and vandalism and occupy the Masterly palaces. There had been considerable shooting in the Servile City; evidently the ex-slaves had to be convinced that they must not pillage or destroy their places of employment.

"Evacuate them off-planet," Shatrak said. "As soon as *Algol* gets here, we'll load the lot of them onto *Mizar* or *Canopus* and haul them somewhere. Ghu only knows how they'll live, but . . ."

"Oh, they won't be paupers, or public charges, Admiral," he said. "You know, there's an estimated five billion crowns in slave-compensation, and when I return to Odin I shall represent most strongly that these survivors be paid the whole sum. But I shall emphatically not recommend that they be resettled on Odin. They won't be at all grateful to us for today's business, and on Odin they could easily stir up some very adverse public sentiment."

"My resignation will answer any criticism of the Establishment the public may make," Erskyll began.

"Oh, rubbish; don't talk about resigning, Obray. You made a few mistakes here, though I can't think of a better planet in the Galaxy on which you could have made them. But no matter what you did or did not do, this would have happened eventually."

"You really think so?" Obray, Count Erskyll, was desperately anxious to be assured of that. "Perhaps if I hadn't been so insistent on this constitution . . ."

"That wouldn't have made a particle of difference. We all made this inevitable simply by coming here. Before we came, it would have been impossible. No slave would have been able even to imagine a society without Lords-Master; you heard Chmidd and Hozhet, the first day, aboard the *Empress Eulalie*. A slave had to have a Master; he simply couldn't belong to nobody at all. And until you started talking socialization, nobody could have imagined property without a Masterly property-owning class. And a massacre like this would have been impossible to organize or execute. For one thing, it required an elaborate conspiratorial organization, and until we emancipated them, no slave would have dared trust any other slave;

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every one would have betrayed any other to curry favor with his Lord-Master. We taught them that they didn't need Lords-Master, or Masterly favor, any more. And we presented them with a situation their established routines didn't cover, and forced them into doing some original thinking, which must have hurt like Niffiheim at first. And we retrained the army and handed it over to Yakoop Zhannar, and inspired Zhorzh Khouzhik to organize the Labor Police, and fundamentally, no government is anything but armed force. Really, Obray, I can't see that you can be blamed for anything but speeding up an inevitable process slightly."

"You think they'll see it that way at Asgard?"

"You mean the Prime Minister and His Majesty? That will be the way I shall present it to them. That was another reason I wanted to stay on here. I anticipated that you might want a credible witness to what was going to happen," he said. "Now, you'll be here for not more than five years before you're promoted elsewhere. Nobody remains longer than that on a first Proconsular appointment. Just keep your eyes and ears and, especially, your mind, open while you are here. You will learn many things undreamed-of by the political-science faculty at the University of Nefertiti."

"You said I made mistakes," Erskyll mentioned, ready to start learning immediately.

"Yes. I pointed one of them out to you some time ago: emotional involvement with local groups. You began sympathizing with the servile class here almost immediately. I don't think either of us learned anything about them that the other didn't, yet I found them despicable, one and all. Why did you think them worthy of your sympathy?"

"Why, because . . ." For a moment, that was as far as he could get. His motivation had been thalamic rather than cortical and he was having trouble externalizing it verbally. "They were *slaves*. They were being exploited and oppressed . . ."

"And, of course, their exploiters were a lot of heartless villains, so that made the slaves good and virtuous innocents. That was your real, fundamental, mistake. You know, Obray, the downtrodden and long-suffering proletariat aren't at all good or innocent or virtuous. They are just incompetent; they lack the abilities necessary for overt villainy. You saw, this afternoon, what they were capable of doing when they were given an opportunity. You know, it's quite all right to give the underdog a hand, but only one hand. Keep the other hand on your pistol—or he'll try to eat the one you gave him! As you may have noticed, today, when underdogs get up, they tend to turn out to be wolves."

"What do you think this Commonwealth will develop into, under Chmidd and Hozhet and Khouzhik and the rest?" Lanze Degbrend asked, to keep the lecture going.

"Oh, a slave-state, of course; look

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who's running it, and whom it will govern. Not the kind of a slave-state we can do anything about," he hastened to add. "The Commonwealth will be very definite about recognizing that sapient beings cannot be property. But all the rest of the property will belong to the Commonwealth. Remember that remark of Chmidd's: 'It will belong to everybody, but somebody will have to take care of it for everybody. That will be you and me.'"

Erskyll frowned. "I remember that. I didn't like it, at the time. It sounded . . ."

Out of character, for a good and virtuous proletarian; almost Masterly, in fact. He continued:

"The Commonwealth will be sole employer as well as sole property-owner, and anybody who wants to eat will have to work for the Commonwealth on the Commonwealth's terms. Chmidd's and Hozhet's and Khouzhik's, that is. If that isn't substitution of peonage for chattel slavery, I don't know what the word peonage means. But you'll do nothing to interfere. You will see to it that Aditya stays in the empire and adheres to the Constitution and makes no trouble for anybody off-planet. I fancy you won't find that too difficult. They'll be good, as long as you deny them the means to be anything else. And make sure that they continue to call you Lord-Master Proconsul."

Lecturing, he found, was dry work. He summoned a bartending robot:

"Ho, slave! Attend your Lord-Master!"

Then he had to use his ultraviolet pencil-light to bring it to him, and dial for the brandy-and-soda he wanted. As long as that was necessary, there really wasn't anything to worry about. But some of these days, they'd build robots that would anticipate orders, and robots to operate robots, and robots to supervise them, and . . .

No. It wouldn't quite come to that. A slave is a slave, but a robot is only a robot. As long as they stuck to robots, they were reasonably safe. ■

THE FOURTH LAW OF MOTION

Next month, Dr. William O. Davis' first article on a fundamental breakthrough in theoretical Mechanics will be published in ANALOG. It is the first basic extension of Mechanics since Newton's day—and shows the basis for true space drives!

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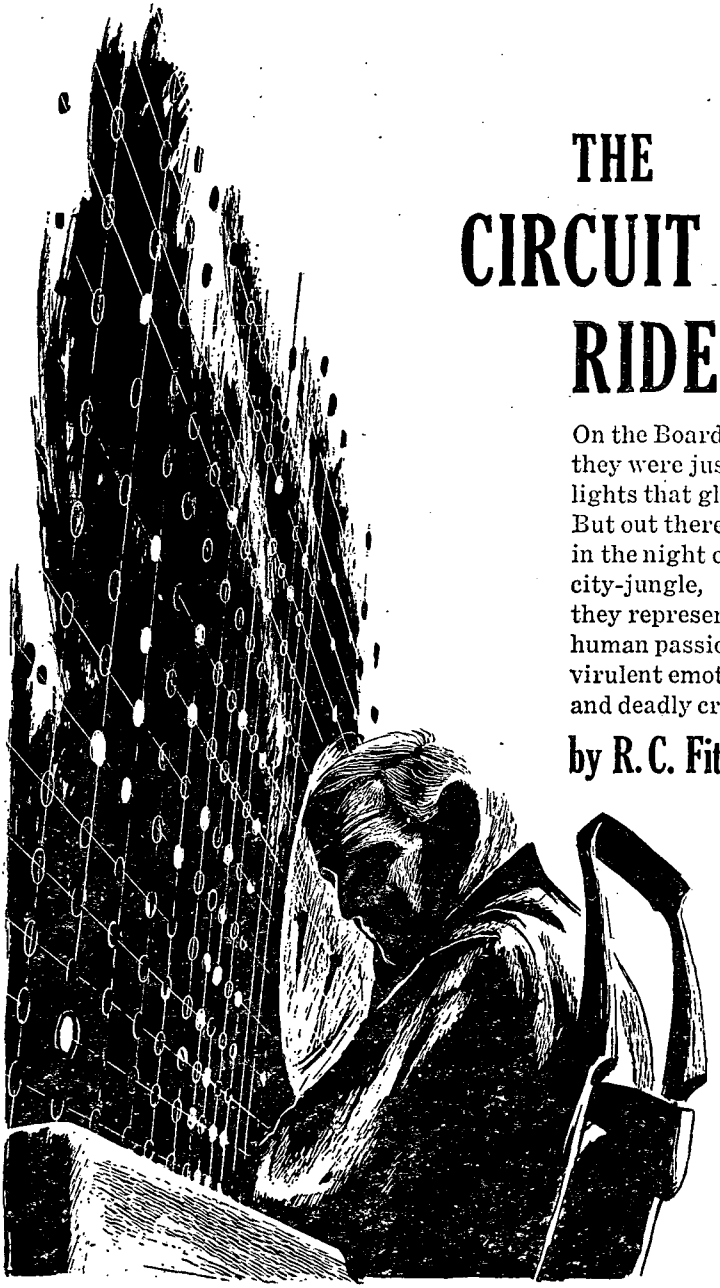

THE CIRCUIT RIDERS

On the Board,
they were just little
lights that glowed.
But out there
in the night of the
city-jungle,
they represented
human passions—
virulent emotions—
and deadly crimes-to-be...

by R. C. FitzPatrick

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■ He was an old man and very drunk. Very drunk or very sick. It was the middle of the day and the day was hot, but the old man had on a suit, and a sweater under the suit. He stopped walking and stood still, swaying gently on widespread legs, and tried to focus his eyes. He lived here . . . around here . . . somewhere around here. He continued on, stumbling up the street.

He finally made it home. He lived on the second floor and he dragged himself up the narrow staircase with both hands clutching the railing. But he was still very careful of the paper bag under his arm. The bag was full of beer.

Once in the room, he managed to take off his coat before he sank down on the bed. He just sat there, vacant and lost and empty, and drank his beer.

It was a hot, muggy, August afternoon—Wednesday in Pittsburgh. The broad rivers put moisture in the air, and the high hills kept it there. Light breezes were broken-up and diverted by the hills before they could bring more than a breath of relief.

In the East Liberty precinct station the doors and windows were opened wide to snare the vagrant breezes. There were eight men in the room; the desk sergeant, two beat cops waiting to go on duty, the audio controller, the deAngelis operator, two reporters, and a local book . . . businessman. From the back of the building, the jail proper, the voice of a prisoner asking for a match floated out to the men in the room, and a few minutes later they heard the slow, exasperated steps of the turnkey as he walked over to give his prisoner a light.

At 3:32 pm, the deAngelis board came alive as half-a-dozen lights flashed red, and the needles on the dials below them trembled in the seventies and eighties. Every other light on the board showed varying shades of pink, registering in the sixties. The operator glanced at the board, started to note the times and intensities of two of the dials in his log, scratched them out, then went on with his conversation with the audio controller. The younger reporter got up and came over to the board. The controller and the operator looked up at him.

"Nothing," said the operator shaking his head in a negative. "Bad call at the ball game, probably." He nodded his head towards the lights on the deAngelis, "They'll be gone in five, ten minutes."

The controller reached over and turned up the volume on his radio. The radio should not have been there, but as long as everyone did his job and kept the volume low, the Captain looked the other way. The set belonged to the precinct.

The announcer's voice came on, ". . . ning up, he's fuming. Doak is holding Sterrett back. What a beef! Brutaugh's got his nose not two inches from Frascoli's face, and Brother! is he letting him have it. Oh! Oh! Here comes Gilbert off the

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mound; he's stalking over. When Gil puts up a holler, you know he thinks it's a good one. Brutaugh keeps pointing at the foul line—you can see from here the chalk's been wiped away—he's insisting the runner slid out of the base path. Frascoli's walking away, but Danny's going right aft . . ." The controller turned the volume down again.

The lights on the deAngelis board kept flickering, but by 3:37 all but two had gone out, one by one. These two showed readings in the high sixties; one flared briefly to 78.2 then went out. Brutaugh was no longer in the ball game. By 3:41 only one light still glowed, and it was steadily fading.

Throughout the long, hot, humid afternoon the board held its reddish, irritated overtones, and occasional readings flashed in and out of the seventies. At four o'clock the new duty section came on; the deAngelis operator, whose name was Chuck Matesic, was replaced by an operator named Charlie Blaney.

"Nothing to report," Chuck told Charlie. "Rhubarb down at the point at the Forbes Municipal Field, but that's about all."

The new operator scarcely glanced at the mottled board, it was that kind of a day. He noted an occasional high in his log book, but most signals were ignored. At 5:14 he noted a severe reading of 87 which stayed on the board; at 5:16 another light came on, climbed slowly through the sixties, then soared to 77 where it held steady. Neither light was an honest red, their angry overtones chased each other rapidly.

The deAngelis operator called over to the audio controller, "Got us a case of crinkle fender, I think."

"Where?" the controller asked.

"Can't tell yet," Blaney said. "A hot-head and a citizen with righteous indignation. They're clear enough, but not too sharp." He swiveled in his chair and adjusted knobs before a large circular screen. Pale streaks of light glowed briefly as the sweep passed over them. There were milky dots everywhere. A soft light in the lower left hand corner of the screen cut an uncertain path across the grid, and two indeterminate splotches in the upper half of the scope flared out to the margin.

"Morningside," the operator said.

The splashes of light separated; one moved quickly off the screen, the other held stationary for several minutes, then contracted and began a steady, jagged advance toward the center of the grid. One inch down, half an inch over, two inches down, then four inches on a diagonal line.

"Like I said," said Blaney. "An accident."

Eight minutes later, at 5:32, a slightly pompous and thoroughly outraged young salesman marched through the doors of the station house and over to the desk sergeant.

"Some clown just hit me . . ." he began.

"With his fist?" asked the sergeant.

"With his car," said the salesman.

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"My car . . . with his car . . . he hit my car with his car."

The sergeant raised his hand. "Simmer down, young feller. Let me see your driver's license." He reached over the desk for the man's cards with one hand, and with the other he sorted out an accident form. "Just give it to me slowly." He started filling out the form.

The deAngelis operator leaned back in his chair and winked at the controller. "I'm a whiz," he said to the young reporter, "I'm a pheenom. I never miss." The reporter smiled and walked back to his colleague who was playing gin with the book . . . businessman.

The lights glowed on and off all evening, but only once had they called for action. At 10:34 two sharp readings of 92.2 and 94 even, had sent Blaney back to his dials and screen. He'd narrowed it down to a four block area when the telephone rang to report a fight at the Red Antler Grill. The controller dispatched a beat cop already in the area.

Twenty minutes later, two very large—and very obedient young toughs stumbled in, followed by an angry officer. In addition to the marks of the fight, both had a lumbering, off-balance walk that showed that the policeman had been prodding them with his riot club. It was called an "electronic persuader"; it also doubled as a carbine. Police no longer carried sidearms.

He pointed to the one on the left, "This one hit me." He pointed to the one on the right, "This one kicked me."

The one on the left was certain he would never hit another cop. The one on the right knew he would never kick another cop.

"Book 'em," the sergeant said. He looked at the two youths. "You're going in the can . . . you want to argue." The youths looked down. No one else said anything. The younger reporter came over and took down the information as the cop and the two toughs gave it to the sergeant. Then he went back to his seat at the card table and took a minityper from his pocket. He started sending to the paper.

"You ought to send that stuff direct," the card player said.

"I scribble too bad," the reporter answered.

"Bat crap," said the older man, "that little jewel can transcribe chicken scratches."

The cub scrunched over his minityper. A few minutes later he looked up at his partner, "what's a good word for hoodlum?"

The other reporter was irritated. He was also losing at gin. "What are you, a Steinbeck?" He laid down his cards. "Look kid, just send it, just the way you get it. That's why they pay re-write men. We're reporters. We report. O.K.?" He went back to his cards.

At 11:40 a light at the end of the second row turned pinkish but no reading showed on the dial below. It was only one of a dozen bulbs showing red. It was still pinkish

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when the watch was changed. Blaney was replaced by King.

"Watch this one," Blaney said to King, indicating an entry in the log. It was numbered 8:20:18:3059:78:4a. "I've had it on four times now, all in the high seventies. I got a feeling." The number indicated date, estimated area and relation to previous alerts in the month, estimated intent, and frequency of report. The "a" meant intermittent. Only the last three digits would change. "If it comes on again I think I'd lock a circuit on it right away." The rules called for any continuous reading over 75 to be contacted and connected after its sixth appearance.

"What about that one?" King said, pointing to a 70.4 that was unblinking in its intensity.

"Some drunk," said Blaney. "Or a baby with a head cold. Been on there for twenty minutes. You can watch for it if you like." His tone suggested that to be a waste of time.

"I'll watch it," said King. His tone suggested that he knew how to read a circuit, and if Blaney had any suggestions he could keep them to himself.

Joe Millsop finally staggered home, exhausted. He was half-drunk, and worn out from being on his feet all day, but the liquor had finally done its work. He could think about the incident without flushing hot all over. He was too tired, and too sorry for himself to be angry at anyone. And with his new-found alcoholic objectivity he could see now where he had been in the wrong. Old Bloomgarten shouldn't have chewed him out in front of a customer like that, but what the hell, he shouldn't have sassed the customer, even if she was just a dumb broad who didn't know what she wanted. He managed to get undressed before he stumbled into bed. His last coherent thought before he fell into a drugged sleep was that he'd better apologize in the morning.

8:20:18:3059:78:4a stayed off the board.

At 1:18 am, the deAngelis flared to a 98.4 then started inching down again. The young reporter sat up, alert, from where he had been dozing. The loud clang of a bell had brought him awake.

The older reporter glanced up from his cards and waved him down. "Forget it," he said, "some wife just opened the door and saw lipstick on her husband's neck."

"Oh Honey, how could you . . . fifty dollars . . ." She was crying.

"Don't, Mother . . . I thought I could make some money . . . some real money." The youngster looked sick. "I had four nines . . . four nines . . . how could I figure him for a straight flush, he didn't have a thing showing."

". . . How could you," sobbed the mother. ". . . Oh how could you."

The book . . . businessman dealt the cards. The reporter picked his up

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and arranged them in his hand, he discarded one; the businessman ignored it and drew from the deck; he discarded; the reporter picked the discard and threw away a card from his hand; the businessman drew from the deck and discarded the same card he'd drawn; the reporter picked it up, tapped it slowly in place with his elbow, placed his discard face down, and spread his hand.

"Gin," he said.

"Arrrgh," said the businessman. "Damn it, you play good. You play real good."

A light on the deAngelis flashed red and showed a reading of 65.4 on the dial.

"Can't beat skill," said the reporter. "Count!"

"Fifty-six," said the businessman. "That's counting gin," he added.

"Game," the reporter announced. "I'll figure the damage."

"You play good," said the businessman in disgust.

"You only say that 'cause it's true," the reporter said. "But it's sweet of you all the same."

"Shut up!" said the businessman.

The reporter looked up, concerned. "You stuck?" he asked solicitously. He seemed sincere.

"Certainly I'm stuck," the businessman snarled.

"Then stay stuck," said the reporter in a kindly tone. He patted the businessman on the cheek.

The same light on the deAngelis flashed red. This time the dial registered eighty-two. The operator chuckled and looked over at the gamblers, where the reporter was still adding up the score.

"How much you down, Bernie?" he asked the businessman.

"Four dollars and ninety-six cents," the reporter answered.

"You play good," Bernie said again.

The deAngelis went back to normal, and the operator went back to his magazine. The bulb at the end of the second row turned from a light pink to a soft rose, the needle on its dial finally flickered on to the scale. There were other lights on the board, but none called for action. It was still just a quiet night in the middle of the week.

The room was filthy. It had a natural filth that clings to a cheap room, and a man-made, careless filth that would disfigure a Taj Mahal. It wasn't so much that things were dirty, it was more that nothing was clean. Pittsburgh was no longer a smokey city. That problem had been solved long before the mills had stopped belching smoke. Now, with atomics and filters on every stack in every home, the city was clean. Clean as the works of man could make it, yet still filthy as only the minds of man could achieve. The city might be clean but there were people who were not, and the room was not. Overhead the ceiling light still burned, casting its harsh glare on the trashy room, and the trashy, huddled figure on the bed.

He was an old man, lying on the

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ILLUSTRATED BY SCHOENHERR

bed fully clothed, even to his shoes. He twisted fretfully in his sleep; the body tried to rise, anticipating nature even when the mind could not. The man gagged several times and finally made it up to a sitting position before the vomit came. He was still asleep, but his reaction was automatic; he grabbed the bottom of his sweater and pulled it out before him to form a bucket of sorts. When he finished being sick he sat still, swaying gently back and forth, and tried to open his eyes. He could not make it. Still asleep he ducked out of the fouled sweater, made an ineffectual dab at his mouth, wadded the sweater in a ball, and threw it over in front of the bathroom door.

He fell back on the bed, exhausted, and went on with his fitful sleep.

At 4:15 in the morning a man walked into the station house. His name was Henry Tilton. He was a reporter for the *Evening Press*. He waved a greeting to the desk sergeant and went over to kibitz the card game.

Both players looked up, startled. The reporter playing cards said,

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"Hello, Henry." He looked at his watch. "Whoosh! I didn't realize it was that late." He turned to the businessman. "Hurry up, finish the hand. Got to get my beauty sleep."

"Whaddaya mean, hurry up," said Bernie, "you're into me for fifteen bucks."

"Get it back from Hank here," the reporter said. He nodded at the newcomer, "Want this hand? You're fourteen points down. Lover boy's got sixty-eight on game, but you're a box up."

"Sure," said Tilton. He took the cards.

The morning news reporters left. The businessman dealt a new hand. Tilton waited four rounds, then knocked with ten.

Bernie slammed down his cards. "You lousy reporters are all alike! I'm going home." He got up to put on his coat: "I'll be back about ten, you still be here?"

"Sure," said Tilton, ". . . with the score." He folded the paper and put it in his pocket.

The businessman walked out and Tilton went over to the deAngelis board. "Anything?" he asked.

"Nah," said King. He pointed to the lights, "just lovers' quarrels tonight; all pale pink and peaceful."

Tilton smiled and ambled back to the cell block. The operator put his feet up on his desk, then frowned and put them down again. He leaned toward the board and studied the light at the end of the second row. The needle registered sixty-six. The operator pursed his lips, then flicked a switch that opened the photo file. Every five minutes an automatic camera photographed the deAngelis board, developed the film, and filed the picture away in its storage vault.

King studied the photographs for quite awhile, then pulled his log book over and made an entry. He wrote: 8:20:19:3142:1x. The last three digits meant that he wasn't sure about the intensity, and the "x" signified a continuous reading.

King turned to the audio controller, "Do me a favor, Gus, but strictly unofficial. Contact everybody around us: Oakland, Squirrel Hill, Point Breeze, Lawrenceville, Bloomfield . . . everybody in this end of town. Find out if they've got one low intensity reading that's been on for hours. If they haven't had it since before midnight, I'm not interested."

"Something up?" the controller asked.

"Probably not," said the operator. "I'd just like to pin this one down as close as I can. On a night like this my screen shows nothing but milk."

"Give you a lift home?" the older reporter asked.

"Thanks," said the cub shaking his head, "but I live out by the Youghiogheny River."

"So?" the older man shrugged. "Half hour flight. Hop in."

"I don't understand," the cub said.

"What? Me offering you a lift."

"No," said the cub. "Back there in the station house. You know."

"You mean the deAngelis?"

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"Not that exactly," said the cub. "I understand a deAngelis board; everybody broadcasts emotions, and if they're strong enough they can be received and interpreted. It's the cops I don't understand. I thought any reading over eighty was dangerous and had to be looked into, and anything over ninety was plain murder and had to be picked up. Here they been ignoring eighties and nineties all night long."

"You remember that children's story you wrote last Christmas about an Irish imp named Sean O'Claus?" his companion asked him.

"Certainly," the cub said scowling. "I'll sell it some day."

"You remember the Fashion Editor killed it because she thought 'See-Ann' was a girl's name, and it might be sacrilegious."

"You're right I remember," the cub said, his voice rising.

"Like to bet you didn't register over ninety that day? As a matter of fact, I'll head for the nearest precinct and bet you five you're over eighty right now." He laughed aloud and the young man calmed down. "I had that same idea myself at first. About ninety being against the law. That's one of the main troubles, the law. Every damn state in the dominion has its own ideas on what's dangerous. The laws are all fouled up. But what most of them boil down to is this—a man has to have a continuous reading of over ninety before he can be arrested. Not arrested really, detained. Just a reading on the board doesn't prove a thing. Some people walk around boiling at ninety all their lives—like editors. But the sweet old lady down the block, who's never sworn in her life, she may hit sixty-five and reach for a knife. And that doesn't prove a thing. Ninety sometimes means murder, but usually not; up to a hundred and ten usually means murder, but sometimes not; and anything over one-twenty always means murder. And it still doesn't prove a thing. And then again, a psychotic or a professional gunsel may not register at all. They kill for fun, or for business—they're not angry at anybody."

"It's all up to the deAngelis operators. They're the kingpins, they make the system work. Not Simon deAngelis who invented it, or the technicians who install it, or the Police Commissioner who takes the results to City Hall. The operators make it or break it. Sure, they have rules to follow—if they want. But a good operator ignores the rules, and a bad operator goes by the book, and he's still no damn good. It's just like radar was sixty, seventy years ago. Some got the knack, some don't."

"Then the deAngelis doesn't do the job," said the cub.

"Certainly it does," the older man said. "Nothing's perfect. It gives the police the jump on a lot of crime. Premeditated murder for one. The average citizen can't kill anyone unless he's mad enough, and if he's mad enough, he registers on the deAngelis. And ordinary robbers get caught; their plans don't go just right, or they fight among themselves. Or, if

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they just don't like society—a good deAngelis operator can tell quite a bit if he gets a reading at the wrong time of day or night, or in the wrong part of town."

"But what about the sweet old lady who registers sixty-five and then goes berserk?"

"That's where your operator really comes in. Usually that kind of a reading comes too late. Grandma's swinging the knife at the same time the light goes on in the station house. But if she waits to swing, or builds herself up to it, then she may be stopped.

"You know those poor operators are supposed to log any reading over sixty, and report downtown with anything over eighty. Sure they are! If they logged everything over sixty they'd have writer's cramp the first hour they were on watch. And believe me, Sonny, any operator who reported downtown on every reading over eighty would be back pounding a beat before the end of his first day. They just do the best they can, and you'd be surprised at how good that can be."

The old man woke up, but kept his eyes closed. He was afraid. It was too quiet, and the room was clammy with an early morning chill. He opened his eyelids a crack and looked at the window. Still dark outside. He lay there trembling and brought his elbows in tight to his body. He was going to have the shakes; he knew he'd have the shakes and it was still too early. Too early. He looked at the clock. It was only a quarter after five. Too early for the bars to be open. He covered his eyes with his hands and tried to think.

It was no use; he couldn't think. He sobbed. He was afraid to move. He knew he had to have a drink, and he knew if he got up he'd be sick. "Oh Lord!" he breathed.

The trembling became worse. He tried to press it away by hugging his body with his arms. It didn't help. He looked wildly around and tried to concentrate. He thought about the bureau . . . no. The dresser . . . no. His clothes . . . he felt feverishly about his body . . . no. Under the bed . . . no . . . wait . . . maybe. He'd brought some beer home. Now he remembered. Maybe there was some left.

He rolled over on his stomach and groped under the bed. His tremulous fingers found the paper bag and he dragged it out. It was full of empty cans; the carton inside was ripped. He tore the sack open . . . empty cans . . . no! there was a full one . . . two full ones—

He staggered to his feet and looked for an opener. There was one on the bureau. He stumbled over and opened his first beautiful, lovely can of beer. He put his mouth down close to the top so that none of the foam could escape him. He'd be all right 'til seven, now. The bars opened at seven. He'd be all right 'til seven.

He did not notice the knife lying beside the opener. He did not own a knife and had no recollection of buying one.

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It was a hunting knife and he was not a hunter.

The light at the end of the second row was growing gradually brighter. The needle traveled slowly across the dial, 68.2, 68.4, 68.6. . . .

King called over to the audio controller. "They all report in yet?"

The controller nodded. "Squirrel Hill's got your signal on, same reading as you have. Bloomfield thinks they may have it. Oakland's not too sure. Everybody else is negative." The controller walked over. "Which one is it?"

King pointed to the end of the second row.

"Can't you get it on your screen?"

"Hell, yes, I've got him on my screen!" King swiveled in his chair and turned on the set. The scope was covered with pale dots. "Which one is he? There?" He pointed to the left. "That's a guy who didn't get the raise he wanted. There?" He pointed to the center. "That's a little girl with bad dreams. She has them every night. There? That's my brother! He's in the Veteran's Hospital and wanted to come home a week ago."

"So don't get excited," said the controller. "I only asked."

"I'm sorry, Gus," King apologized. "My fault. I'm a little edgy . . . probably nothing at all."

"Well you got it narrowed down anyway," Gus said. "If you got it, and Squirrel Hill's got it, then he's in Shadyside. If Oakland doesn't have him, then he's on this side of Aiken Avenue." The controller had caught King's fever; the "it" had become a "him". "And if Bloomfield doesn't have him, then he's on the other side of Baum Boulevard."

"Only Bloomfield might have him."

"Well what the hell, you've still got him located in the lower half of Shadyside. Tell you what, I'll send a man up Ellsworth, get Bloomfield to cruise Baum Boulevard in a scout car, and have Squirrel Hill put a patrol on Wilkens. We can triangulate."

"No," said King, "not yet. Thanks anyway, Gus, but there's no point in stirring up a tempest in a teapot. Just tell them to watch it. If it climbs over 75 we can narrow it down then."

"It's your show," said Gus.

The old man finished his second can of beer. The trembling was almost gone. He could stand and move without breaking out in a cold sweat. He ran his hand through his hair and looked at the clock. 6:15. Too early. He looked around the room for something to read. There were magazines and newspapers scattered everywhere; the papers all folded back to the sports section. He picked up a paper, not even bothering about the date, and tried to interest himself in the batting averages of the Intercontinental League. Yamamura was on top with .387; the old man remembered when Yamamura came up as a rookie. But right now he didn't care; the page trembled and the type kept blurring. He threw the paper down. He had a headache.

The old man got up and went

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over to the bathroom. He steadied himself against the door jamb and kicked the wadded sweater out of sight beneath the dresser. He went into the bathroom and turned on the water. He ran his hands over his face and thought about shaving, but he couldn't face the work involved. He managed to run a comb through his hair and rinse out his mouth.

He came back into the room. It was 6:30. Maybe Freddie's was open. If Freddie wasn't, then maybe the Grill. He'd have to take his chances, he couldn't stand it here any longer. He put on his coat and stumbled out.

At eight o'clock the watch was changed; Matesic replaced King.

"Anything?" asked Matesic.

"Just this one, Chuck," said King. "I may be a fool, but this one bothers me." King was a diplomat where Blaney was not.

King showed him the entry. The dial now stood at 72.8. "It's been on there all night, since before I had the watch. And it's been climbing, just slow and steady, but all the time climbing. I locked a circuit on him, but I'll take it off if you want me to."

"No," said Matesic, "leave it on. That don't smell right to me neither."

The old man was feeling better. He'd been in the bar two hours, and he'd had two pickled eggs, and the bartender didn't bother him. Beer was all right, but a man needed whiskey when he was sick. He'd have one, maybe two more, and then he'd eat some breakfast. He didn't know why, but he knew he mustn't get drunk.

At nine o'clock the needle on the dial climbed past seventy-five. Matesic asked for coverage. That meant that two patrolmen would be tied up, doing nothing but searching for an echo. And it might be a wild goose chase. He was explaining to the Captain, but the Captain wasn't listening. He was looking at the photographs in the deAngelis file.

"You don't like this?" the Captain asked.

Matesic said he didn't like it.

"And King said he didn't like it?"

"King thinks the same way I do, he's been on there too damn long and too damn consistent."

"Pick him up," the Captain turned and ordered the audio controller. "If we can't hold him, we can at least get a look at him."

"It's not too clear yet," said Matesic, "it'll take a spread."

"I know what it'll take," the Captain roared. "Don't tell me my job! Put every available man on this, I want that guy brought in."

The old man walked back to his room. He was carrying a dozen cans of beer, but the load was light and he walked upright. He felt fine, like a million dollars. And he was beginning to remember.

When he entered the room he saw the knife and when he saw the knife he smiled. A man had to be smart and a man had to be prepared. They were smart. . . . wicked and smart

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. . . but he was smarter. He'd bought the knife a long, long time ago, in a different world—they couldn't fool him that way. They were clever all right, they fooled the whole world.

He put his beer on the bureau, then walked into the bathroom and turned on the water in the tub. He came back out and started to undress. He was humming to himself. When he finished undressing he went over to the bureau and opened a can of beer. He carried it into the bathroom, put it beside the tub, and lowered himself into the water.

Ah . . . that was the ticket. Water and being clean. Clean and being water. Being water and being candy and being smart. They fooled the whole world, but not him. The whole, wide world, but they couldn't fool him. He was going to fool them. All pretty and innocent. Hah! Innocent! He knew. They were rotten, they were rotten all the way through. They fooled the whole world but they were rotten . . . rotten . . . and he was the only one who knew.

He finished the beer and stood up in the tub. The water ran off his body in greasy runlets. He didn't pull the plug. He stepped out of the tub and over to the bathroom mirror. His face looked fine, not puffy at all. He'd fool them. He sprinkled himself with lilac water, put the bottle to his lips, and swished some of it in his mouth. Oh yes, he'd fool them. A man couldn't be too clever, they were clever, so he had to be clever. He began to shave.

The Captain was on an audio circuit, talking to an Assistant Commissioner. "Yes, Sir, I know that—Yes, Sir, it could be, but it might be something else—Yes, Sir, I know Squirrel Hill has problems, but we need help—Yes, Commissioner, it's over ninety now (The Captain signaled wildly to Matesic; Matesic held up four fingers, then two) 94.2 and still going up—No, Sir, we don't know. Some guy gonna quit his job . . . or kill his boss. Maybe he found out his wife is cheating on him. We can't tell until we pick him up—Yes, Sir—Yes, Sir—Thank you, Sir."

The Captain hung up. "I hate politicians," he snarled.

"Watch it, Captain," said Matesic, "I'll get you on my board."

"Get me on it, Hell," the Captain said, "I've never been off."

The old man finished dressing. He knotted his tie and brushed off the front of his suit with his hand. He looked fine. He'd fool them, he looked just like anybody else. He crossed to the bureau and picked up the knife. It was still in the scabbard. He didn't take it out, he just put it in his pocket. Good. It didn't show.

He walked out on the street. The sun was shining brightly and heat waves were coming up from the sidewalk. Good. Good. This was the best time. People, the real people, would be working or lying down asleep. But they'd be out. They were always out. Out all sweet and innocent in the hot sun.

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He turned down the street and ambled toward the drug store. He didn't want to hurry. He had lots of time. He had to get some candy first. That was the ticket, candy. Candy worked, candy always worked. Candy was good but candy was wicked. He was good but they were wicked. Oh, you had to be smart.

"That has to be him," Matesic said. The screen was blotched and milky, but a large splash of light in the lower left hand corner outshone everything else. "He's somewhere around Negley Avenue." He turned to the Captain. "Where do you have your men placed?"

"In a box," the Captain said. "Fifth and Negley, Aiken and Negley, Center and Aiken, and Center and Negley. And three scout cars overhead."

The old man walked up Ellsworth to the Liberty School. There were always lots of young ones around Liberty School. The young ones were the worst.

"I'm losing him."

"Where are you?"

"Center and Aiken."

"Anybody getting him stronger?"

"Yeah. Me. Negley and Fifth."

"Never mind. Never mind, we got him. We see him now."

"Where?"

"Bellefonte and Ivy. Liberty School."

She was a friendly little thing, and pretty. Maybe five, maybe six, and her Mommy had told her not to talk to strangers. But the funny old man wasn't talking, he was sitting on the curb, and he was eating candy, and he was offering some to her. He smiled at the little girl and she smiled back.

The scout car settled to earth on automatic. Two officers climbed out of the car and walked quietly over to the old man, one on either side. They each took an arm and lifted him gently to his feet.

"Hello there, Old Timer."

"Hi, little girl."

The old man looked around bewildered. He dropped his candy and tried to reach his knife. They mustn't interfere. It was no use. The officers were very kind and gentle, and they were very, very firm. They led him off as though he were an old, old friend.

One of the officers called back over his shoulder, "Bye, bye, little girl."

The little girl dutifully waved 'bye.

She looked at the paper sack on the sidewalk. She didn't know what to do, but the nice old man was gone. She looked around, but no one was paying any attention, they were all watching the softball game. Suddenly she made a grab and clutched the paper bag to her body. Then she turned and ran back up the street to tell her Mommy how wonderful, wonderful lucky she was. ■

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the Reference Library

P. Schuyler Miller

WHAT IS MAN—?

Those of you who were tempted to check up on the schizophrenia of the Luce organization, which had *Life* running a somewhat awed feature on a book which *Time* then ripped to shreds with blind fury, have presumably formed your own opinions of Robert Ardrey's "African Genesis." I found it less amazing than the general reviewers, but a meaty and thought-provoking piece of conjecture about some things that have played an important part in science fiction.

The book, for the record, is published by Atheneum of New York; it has 380 bulky pages, and costs $6.95. I wish it had been written by Loren Eiseley, who is both a scientist and an immensely talented writer, rather than by Mr. Ardrey, who is a playwright and journalist with an amateur's interest and more-than-ordinary competence in anthropology. However, I am glad someone wrote it, and I hope the issues it raises are widely discussed . . . provided they are discussed as scientific issues, and not as matters of ideology or philosophy.

It should be no news to veteran readers of science fiction that "outside" critics, and some insiders, have been distressed over the xenophobia stereotype in science fiction. In most stories—and the exceptions are usually pointed out because they *are* exceptions—there is automatic hostility between Men and Aliens, whether they encounter each other on the battlefields of Earth, of galactic spaces, or of the Andromeda Galaxy. By and large Mankind comes out into space with all guns blazing and takes over the Universe, which rise scientists then rule benignly forever. In the verso of this formula, we are defending our planet, or our stellar empire, or our galaxy against imperialist invaders.

In a newer and rather sheepish switch on these time-tested formulae,

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we find that we have been barred from the juicy largesse of a universal Welfare State just because we *are* the only critters in the Galaxy with a built-in chip on our shoulders. This is a particularly useful formula for juvenile science fiction that is expected to get past school librarians and teachers.

In this fascinating but rambling book, part personal experience, part personal interpretation, part relatively straight reporting of data and hypotheses that have been battering bloodily against the same entrenched orthodoxy that John Campbell doggedly denounces, Robert Ardrey presents a plausible chain of evidence that Man is "descended from Cain"—that we do reach adulthood with chips on our shoulders and an instinctive knowledge that the man in the next yard, the bastards in the next state, the SOB's in that other country, and the fiends on other planets must be smashed before they smash us. He suggests that this is a real instinct, built into our genes some time back toward the dawn of time, after the insects left the family tree but perhaps not long after, since most of the higher phylae have it.

Another favorite target for the critics, and especially the more liberally oriented of them, is the stereotype of the totalitarian state, the regimented society, which crops up over and over as the product of scientific planning of a "good" society. Mr. Ardrey offers another chain of evidence to show that the dominance instinct—"pecking order," "status seeking," or whatever name you prefer—is also built into us, as a companion and occasionally a rival to the territorial instinct.

He does this by surveying, in the early chapters of the book, a series of rather neglected studies by naturalists, biologists, and amateurs as rank as he, thee, and me. Some chronicle the behavior of birds, some of fish, some of monkeys, some of other fauna. He shows the instinctive drives to claim and protect a territory, and to rule the roost within it, occurring consistently all the way up the evolutionary scale . . . and makes the logical conclusion that they are born into us too.

This in itself is meat enough to set off a host of pulpit pundings, vitriolic denunciations, and wee-hour bull sessions. In the last half of his book, the author rubs salt into the gashes he has opened by documenting his conclusion. Here he is on weaker ground, because until a time machine is invented by some bowling alley pinboy or parking-lot attendant nobody is going to observe the behavior of the first men or their not-quite-human ancestors. There has been a professional battle in progress for some years on this street corner, and you know what happens when a total stranger—from out of town at that—comes along and mixes into a private fight. This is another reason why I wish Loren Eiseley had written the book; he's been in that fight from the start, but he is the kind of scientist who withdraws from the shemozzle from time to time to breathe on his

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knuckles and look at the passing girls.

You see, we have just lost one of our last-stand criteria for separating the men from the not-men. Deep in the fantastically rich fossil layer-cake of Olduvai Gorge, in East Africa, Dr. L. S. B. Leakey and his wife have found stone tools side by side with the bones of a being whose body and teeth are human, but whose cupful of brains are just about enough to keep a gorilla out of the quicksand. And this near-man—whom Leakey has named *Zinjanthropus* but others consider just another of the big *Australopithecus* clan—lived a million and three-quarters years ago, if nothing is fundamentally wrong with the potassium/argon method of dating rocks.

If we refuse to accept an ancestor like *Zinjanthropus* into the human clan until he can show a man-size brain, then tools and weapons—"real" stone-age tools—*preceded* Man. Ardrey suggests that they may have created Man: selection ought to take care of that in a not-quite-ape who found that better tools, and better use of them, allowed him to defend a bigger territory and dominate a bigger social group.

But stone tools are by no means the only possible tools. In Pennsylvania, excavations at a dry rock shelter dating from the early 1500's shows that stone and pottery—the imperishables that the archeologist ordinarily finds—make up only a small percentage of the total kit of bone, wood, bark, skin, fiber and feathers that Indians of that late day used. And in another quarter of Africa—South Africa—the battle over which came first, man or tools, started long before the Leakeys discovered Olduvai.

An Australian-born anatomist, Dr. Raymond Dart, started that particular preliminary back in 1949. He has been abetted by a neighboring zoologist, Dr. Robert Broom. Dart found the first skull of what any science fictionist would call a humanoid, but the paleontologists call hominids, back in 1924. Then, beginning in the 1930's, he, Broom, and their associates began to find more, and more kinds of man-apes in the South African caves. And Dart presented good evidence—which Ardrey as a some-time statistician has checked from a mathematical angle—to show that *these* not-quite-men were tool-users and murderers. They used knobby long-bones and spikey horns and saw-edged jaws to clobber their baboon adversaries—and some of their neighbors—and cut up the remains for breakfast.

These South African predecessors of Samson, preferring thigh-bones to jawbones as weapons, are physically the same kind of humanoids as their cousin up in Tanganyika. They seem to have lived quite a lot later, but if a guess of six hundred thousand years could be changed into close to two million at Olduvai, so may it down the line at Makapan and Swartkrans and Sterkfontein.

There is plenty more good thought-stirring argument in "African Genesis." Take the title, and the age of these prehumans. The old guard who

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believe that even if the cradle of Man wasn't the biblical Eden, it was over the hill in central or southern Asia, now have to face snowballing evidence that men evolved from premen in that ancient continent, Africa. This is something of a paleontological shocker, and I am sure it gives the white supremecists nightmares. Can we *all* be Africans?

There is the interesting point that Freud's work, and the whole structure of psychology and psychoanalytical theory which grew from it, was tied to the belief of zoologists of his day that sex is the dominant drive in beasts and man. But if the drive to claim and defend a territory, and to dominate that territory, is not only older but stronger—and Ardrey points out cases where they are—then Freud may have built his great theoretical structure on the wrong foundation.

There is the proposal that whereas Man's direct ancestor was "Cain"—the australopithicine humanoid who went out into the open plains and fought for a living when Africa began to dry up in the Pliocene era, it may have been "Abel," his less aggressive cousin who stayed at home in the bush and grubbed for roots and bugs, who invented stone tools.

There is another point which has also been a cliche in science fiction for a long time: that no matter what our instinctive drives toward aggression and xenophobia may be, intelligence makes it possible for us to bypass them and surmount them. We don't have to act instinctively, like the Rhone beavers building dams after four hundred years: we can think, and base our actions on reason. Nor is cooperation and social action a human invention. The most successful apes and monkeys are great socializers—the solitary gorillas may be moping themselves into extinction—and even lions get up hunting parties of as many as forty-five, organized along rigid social lines.

Maybe science fiction has been right all along. Maybe when we go into space, we will go roaring and slugging. It will appparently be the natural thing to do. But we can go out thinking, and thought can dominate instinct because it allows us to use and shape the future, whereas instinct only lets us draw on the instinctive heritage from our African genesis.

MIND PARTNER edited by H. L. Gold. Doubleday & Co., Garden City, N. Y. 1961. 263 pp. $3.95

It's *Galaxy* time again out in Garden City—this time with a collection of nine novelets published between 1955 and 1961. It is not entirely a case of sour grapes when I complain that just as Astounding/Analog has been too little represented by anthologies, *Galaxy* has overdone it. As these two or three volumes a year pile up, the general level stays high but the really outstanding stories don't seem to be there, and when they are, it is writing and not ideas that make them so.

The title story, by Christopher Anvil, is an example: a what-in-hell's-going-on plot that keeps you reading to find out why people keep coming

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back to those rickety old houses, but hard to remember when you've finished. Cordwainer Smith's "The Lady Who Sailed the Soul," on the other hand, is the outstanding story in the book for a strange theme—interstellar sailing ships and the terrible way they must be navigated—and for the writing that makes it real and memorable. This author just does not let anything poor get into print.

Neal Barrett, Jr., in "The Stentorii Luggage," has pure entertainment: farce comedy of savage "pets" at large in a hotel full of the weirdest races —comedy and a nice puzzle to boot. It is promptly followed by a grim bit, "Snuffles" by R. A. Lafferty, that in any other magazine would have to be called fantasy, since the creature for whom it is named is obviously a minor god.

Next comes William Morrison's "The Sly Bungerhop," and I don't know why it's there. It's that tired old one about the elevator that goes to the future just once. Light, nicely done, but strictly a time-marker. "Blacksword" by A. J. Offutt, on the other hand, is a thoroughly enjoyable piece of entertainment about interstellar politics and finagling on a large scale. And "The Civilization Game" by Clifford D. Simak, which follows, is par for that writer's fast course: glimpses of a future in which Earth is trying to retain some of its own skills in spite of the supervision of a galactic civilization—a neat, hard plot—and a thought-provoking hooker that reminds you of Jack Williamson's "The Humanoids."

Pure delight from an experienced hand is the verdict on Evelyn E. Smith's "The Hardest Bargain." This is deft comedy and a kind of counterpoint to the Simak story, with the Earthly yokels trying to out-swindle a trader from the stars. Finally, "With Redfern on Capella XII" by Charles Satterfield is still enjoyable bit of interstellar nonsense in which our hero outsmarts the aliens and rescues his rescuers in spite of themselves.

HIDDEN CHANNELS OF THE MIND by Louisa E. Rhine. William Sloane Associates, New York. 1961. 292 pp. $5.00

While her husband, Professor J. B. Rhine of Duke University's parapsychology laboratories, work on experimental ESP or "psi," Mrs. Rhine has been devoting her time to the collection and documentation of "spontaneous" occurrences of telepathy, clairvoyance, precognition, and communication with ghosts. In this very disappointing book she sums up the current state of her investigations.

Spontaneous psi experiences are, of course, as old as man. It was the conviction that "something" was happening, and that investigation by scientific methods might show what that something is, that led to the formation of the various Societies for Psychical Research and to the now venerable activity in experimental parapsychology. To the layman, and certainly to the religious or superstitious layman who needs no "scientific" explanation, they are generally far more convincing than the mathematically impressive odds against

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guessing as many cards as Mr. X did, which leave most people cold. Even from a statistical point of view, these spontaneous experiences are so complex, involving so many variables, that *if they occurred as described* there must indeed be "something there."

That "if," is, of course, the loophole. At least one scientist has gone so far as to suggest that all the results of the experimenters are faked, and it is practically impossible to prove with any statistical validity that these reports of reading other people's thoughts, seeing far places, witnessing train wrecks before they occur, and seeing apparaitions of the distant dead, are not also conscious or unconscious after-the-fact fakes. Mrs. Rhine and her colleagues have devoted themselves to trying to close this loophole, using only the best cases.

What is exasperating and discouraging to me is that, like her husband with her experimental results, Mrs. Rhine contents herself with stringing together a series of these case histories which—if they are accepted—add up to no more than the original hypothesis that there is "something there." It seems almost impossible that after almost a generation of study some patterns should not be emerging—and some are, indeed, suggested, but only very cautiously. At the end of the book, the only prospect from the Duke Parapsychology Laboratory is another just like it, with a few more cases, twenty-five years from now.

What would have made a good book, and what I hope someone—apparently some English psychic researcher—will write, is a survey which of course presents some typical and some remarkable cases of presumed ESP, then shows how the researcher digs into the evidence to confirm or shake the reports, and finally ventures to predict that when the facts are all in, ESP or psi or whatever name survives will be thus-and-so. Must we go on forever, proving or trying to prove that the lights in the sky are stars?*

THE INFINITE MOMENT by John Wyndham. Ballantine Books, N. Y. 1961. No. 546. 159 pp. 35¢

Under various names, this English author has won himself as solid a place in science fiction as any of his fellow-countrymen since H. G. Wells, with the possible exception of Arthur Clarke. This is not the kind of reputation that is lightly to be destroyed. It is, consequently, far more than a mistake that the six stories about time, thrown together in this collection, have all been published together.

Apart from the opening story, "Consider Her Ways," which first appeared and is still available in the Ballantine trio, "Sometime, Never," this entire book adds up to rapping charming rhythms on a flat bongo drum. The theme, the gimmick, the "haunting originality" of which the publisher speaks hopefully, is simply—in every story but the first—that someone has traveled in Time.

Individually, among other stories

* The answer is "Yes—until orthodox scientists at least admit there *are* lights in the sky!" *Editor.*

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on other themes, these tales would be admirable. The Wyndham smoothness and urbanity—the pure professionalism that got him into *Colliers* and other general-fiction magazines—is always present. The mechanism is as often unexplained fantasy as rationalized science fiction—and there are purists who insist that all time-travel stories are fantasies, since science offers no rationale for them. In "Odd," a tale that might have been told by Mr. Jorkens in the White Hart, a young man is run down by a cab in 1906 and pops into his aged body in 1958, where he learns that he has become a king of the plastics industry—which didn't exist in 1906. He soon dies, and the young man in 1906 begins to experiment with plastics. "It's all very queer," says Mr. Fratton in 1958.

In "How Do I Do?" a young woman visits a gypsy, looks in her crystal ball, and visits herself in the future. In "Stitch in Time" an old woman discovers how an experiment with time, in her old age, lost her a suitor in her youth. In "Random Quest", perhaps the second-best of the lot, a man who has married in an alternate time-stream is trying to find the counterpart of his bride in our continuum. And in "Time Out," whose impudent tongue-in-cheek muddle of time and marital relations also rates some extra points, two couples are snatched into a distant future whose young men—to the wives at least—are charming.

"Consider Her Ways" is in a class by itself, and would be worth the price of the book if it weren't also available in the far better "Sometime, Never." In this, under the influence of an experimental drug, the personality of a young woman is detached and finds itself in the body of a Mother of some three generations, when men are extinct and women, reproducing by parthenogenesis, have created a new society of the anthill or the hive. Here is science fiction at its best, and time travel at its best: a future society, turned bizarre by altering one element, sketched with vivid economy and made completely real; our own times, seen by the historians of that era, deftly satirized. Good SF; good Wyndham; good story.

But why must all the rest of the book be so much the same?

ANTHEM by Ayn Rand. Signet Books, N. Y. 1961. No. D-1985. 50¢

According to the publisher's statements, this long short story was published in England in 1938; its "unconventional philosophy delayed its American publication"—by Pamphleteers, Inc."—until 1946. Now, presumably, someone has convinced Signet that the conservative wave has risen high enough—as witness the success of the author's "Atlas Shrugged" and her training centers in Randian philosophy, as expensive as anything since Scientology—to make a popular edition salable. It probably will be.

Though old stuff by SF standards, this little parable on the horrors of collectivism is a little more subtle and therefore a little better reading than the author's more ponderous propa-

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ganda fiction. In an undated future, the trends of the Roosevelt era have gone so far out of hand that a totalitarian state of egalitarian mediocrity possesses America. The first person has been rooted out of the language: units of the state must speak and think of themselves as "we," and if they are not born to their lot quite so irrevocably as bees and ants, it is decided for them pretty early in life, and no deviation is tolerated.

The hero, Equality 7-2521, is a maverick; he has ideas; he asks questions; he wants to become a member of the Council of Scholars, but in punishment for his deviation he lands in the Home of the Street Sweepers.

But, as a grand old fraternity ballad has long reassured us, even street sweepers have their opportunities. Equality discovers and falls in love with a delightful potato planter, seventeen-year-old Liberty 5-3000; he finds a forgotten section of Manhattan's ancient subway and rediscovers electric light; he goes bubbling with the news to the Scholars, who—as John Campbell has also forewarned us—turn him over to the cops: "What is not thought by all men cannot be true," says Collective 0-0009. During the scholarly discussion over whether to burn him at the stake or lash him to ribbons, he departs without permission, taking his discovery with him.

And so, having picked up his girl friend—who will doubtless keep the couple in food while Equality, renamed Prometheus, thinks—he retires to a far mountain-top palace to father a new era. Curtain. Sobs from the audience. Baffled hisses from the White House.

Every time this story has been told in a science fiction magazine—and I'll admit it was pretty crudely done in 1937; perhaps more crudely than Miss Rand does it—it was automatically discounted as pulp trash. Coming from this source it is "beautiful . . . provocative . . . thought-provoking . . . unforgettable." The publishers say so.

CANARY IN A CAT HOUSE by Kurt Vonnegut, Jr. Gold Medal Books, N. Y. 1961. No. S-1153. 160 pp. 35¢

Science fictionally, Kurt Vonnegut is the author of that satire of automated industry, "Player Piano"—based, it is whispered, on his experiences while working for General Electric—that outrageous, surrealistic parody of science fiction, "Sirens of Titan," and the psi story—his first—that created a furor in *Colliers* and may have set off that lamented magazines too-short affairs with science fiction, "Report on the Barnhouse Effect."

The twelve stories in this collection are not all science fiction; some are "straight" stories, some should be called fantasy, in that no rational or rationalizing explanation is offered. With the exception of two from *Galaxy*, they are all professional general-fiction stories from the general-fiction magazines: *Colliers, Saturday Evening Post, Esquire,* and I presume *Cosmopolitan.* Readers of Analog will consequently find the ideas and gim-

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micks unremarkable, but what is done with the gimmicks smoothly expert.

Let's omit the non-SF/fantasies, which are not so superior in either gimmick or writing. There remain six science fiction yarns and one fantasy which you may not have seen in their original incarnations.

"Report on the Barnhouse Effect" is still a good psi story, in anyone's league. To *Colliers* readers, the possibility that a man could develop mental powers greater than atomic bombs was a shocking novelty; to us hardened souls, the fact that the story was well told had to replace the novelty of theme. "The Manned Missiles", on the other hand, reaches too far for a soap-opera audience. A Russian and an American astronaut have gone up into orbit and blasted each other out of the sky; the noble fathers of the two noble lads forgive each other publicly, and the Cold War crumples.

"The Euphio Question" tinkers with the question: can there be too much of a Good Thing? Good Thing is Euphio, an invention that broadcasts a feeling of utter well-being with your favorite radio program. Dating from a 1951 *Colliers* this anticipates, in near-farce, the grim results which psychologists have obtained by stimulating the pleasure centers of rats' brains.

"Hal Irwin's Magic Lamp" is a warm, folksy, domestic comedy about the engineer who makes a fake magic lamp to entertain his wife—and the damn thing works! "Tom Edison's Shaggy Dog" is a delightful fable about what happened when Edison tried his intelligence analyzer on his dog.

Finally come the two more traditional offerings from our neighbor, *Galaxy*. In "Unready to Wear" the Amphibians—who have achieved immortality by body-swapping—are almost trapped by some non-immortals. Nice in detail; routine otherwise. "Tomorrow and Tomorrow and Tomorrow", on the other hand, is a fang-bared extrapolation of current geriatric problems into 2158, when the old don't die—and still control the economic aspects of society. I'll remember Kurt Vonnegut by this and his two novels.

THE DAY THEY H-BOMBED LOS ANGELES by Robert Moore Williams. Ace Books, N. Y. No. D-530. 128 pp. 35¢

This meant-to-be timely opus, published if not written with an eye to cashing in on the fall-out furor, is subtitled "a science fiction shocker." It might better have been called "a science fiction stinker." If the author's agent is smart, it will be snapped up for a standard Hollywood monster movie, with the happy circumstance that the monsters don't need expensive makeup: they are human "zombies," and their boss is a luscious "tiger woman."

The premise of this old-fashioned piece is that a mysterious plague—gigantic molecules turned malicious and possessing human bodies—is loose in L.A. To prevent its spreading, the U.S. Government throws a ring of military around the city, and proceeds to H-bomb it in the hope of

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cauterizing the alien menace—or something. If the results are typical of what our military capabilities are, there should be rejoicing in Moscow: no very great damage, except to the water and power supply. No heat to accompany the initial flashes of light, for example. Convenient rain, which puts out any fires, washes the fall-out out of the air, and—doubtless with the air of burst boxes of just the right detergents from supermarkets—decontaminates the streets.

The good guys, holed up with a few desultory trouble-makers in a World War II shelter under a store, wait out the initial stages, then find a defendable warehouse where a Good Scientist is secretly hunting for the secret of the Mad Molecules. Soon zombies are howling in the streets on all sides, and the siege is on. Nobody can leave the city, for the troops will shoot 'em down. And all the zombies *really* want is desegregation on their terms—a blood-brotherhood in which everyone is like them.

The author used to write good detective stories. I wish he would again.

BANTAN PRIMEVAL by Maurice B. Gardner. Forum Publishing Co., Boston. 1961. 373 pp. $3.00

According to the jacket, this is the seventh in a series of books about a South Pacific imitator of Tarzan. Presumably somebody has been buying enough of them to keep the series coming. I really don't know why. Burroughs—even in his later years, when some people suspected he had had John Carter send him a Martian computer that could turn out books automatically—injected some suspense and color into his formula yarns. Bantan just moves from one to another of a series of sets, in what might be a dramatization by a high school English class.

Bantan, it seems, seven books back—that would be "Bantan of the Islands"—was the child of a white couple wrecked on a "lost" Pacific island, whose friendly but lowly natives brought him up. This, apparently, was pre-war, with Tarzan and his creator still alive, for Bantan seems to have done his bit to protect his islands during the Japanese drive into the South Pacific. More recently he has come into contact with a mad scientist, Dr. Zarwood, who has the secret of immortality, plus a machine that in a former book allowed Bantan to relive the perilous adventures of his ancestors, plus other marvels.

This time Bantan, deciding that all this is so much fun that he'd like to keep going forever, revisits Zarwood to get an immortality shot. The mad doctor double-crosses him, Bantan escapes with a delicious damsel, and the rest of the book is played out on another lost island which is apparently to be the scene of several more books. It has the standard wall of cliffs with only one entrance, and inside there is a true Hollywoodian assortment of dinosaurs, plus at least one Lost White Race of Amazons, plus a handsome Polynesian flyer, plus other marvels.

One irritatingly plunked note through all this is the reiteration, by the author and by Bantan himself,

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that this beardless but never-shaving hero is Really a White Man, hence Superior to all Colored Races, hence able to diddle around with the beautiful natives who throw themselves at them in threes and fives but Unable to Bring Himself to Defile Himself by marriage with anyone of Lower Status.

The author ends with the note of promise: "Bantan experiences further adventures on the primeval island—more astounding than in the present volume. Watch for " BANTAN FEARLESS." You watch; I'll reread Burroughs.

REPRINT ROUNDUP

Reprints and in some cases rereprints are coming out even faster than new paperback science fiction these days. And this list does not include the collections of weird and horror stories that already constitute a trend. I'm listing these recent pb reprints alphabetically; those for which there's no room this month can follow later.

THE GOLDEN APPLES OF THE SUN by Ray Bradbury. Bantam Books, N. Y. No. J-2306. 1961. 169 pp. 40¢

Bantam's original pb edition came out in 1954. New printing; new cover; mixture as before.

MASTER OF SPACE by Arthur C. Clarke. Lancer Books, N. Y. No. 72-610. 1961. 158 pp. 50¢

A new publisher and new name for Clarke's "Prelude to Space," one of his best documentaries—written in 1947, and as good as ever.

TOMORROW AND TOMORROW by Hunt Collins. Pyramid Books, N. Y. No. G-654. 1961. 190 pp. 35¢

Vicarions versus Realists in a tangled, corrupt future. Rerun in paper.

. . . AND SOME WERE HUMAN by Lester del Rey. Ballantine Books. N. Y. No. 552. 1961. 160 pp. 35¢

Lester del Rey was one of the writers and these were some of the stories that earned Astounding its first greatness in the years from 1938 to 1943. Here's a chance to find out why they were great.

NOT IN SOLITUDE by Kenneth F. Gantz. Berkley Books, N. Y. No. Y-582. 1961. 192 pp. 40¢

This was a suspenseful yarn about the strange plants and stranger calamities encountered by the first expedition to Mars. Cover says it's been revised. I haven't checked the original to find out how.

STARSHIP TROOPERS by Robert A. Heinlein. Signet Books, N. Y. No. D-1987. 1961. 208 pp. 50¢

Like it or not, you can't deny that this is one of the most memorable science fiction books of recent years, richly earning its Hugo as best novel of 1959. Read it—or read it again.

21st CENTURY SUB by Frank Herbert. Avon Books, N. Y. No. G-1092. 190 pp. 50¢

A re-reprint of the paperback edition of another of the top SF novels of any time. It was serialized here in 1955-'56 as "The Dragon in the Sea." If you've miseed it, don't.

THE OUTLAWS OF MARS by Otis Adelbert Kline. Ace Books, N. Y.

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No. D-531. 1961. 158 pp. 35¢
Paperback of Kline's second imitation of Burroughs' Mars books, never as good as his Venus series but better than the preceding "Swordsman of Mars."

THE FORGOTTEN PLANET by Murray Leinster. Ace Books, N. Y. No. D-528. 1961. 175 pp. 35¢
As I recall, this is a re-reprint; Murray Leinster's two classic short stories, "Mad Planet" and "Red Dust" go back to the first days of *Amazing Stories*. They have now been moved to another world than Earth, and the 1953 sequel from Hugo Gernsback's *Science Fiction Plus* rounds out the story of men against giant insects. A little dated, but mighty little.

The Analytical Laboratory

Various complications have delayed us in keeping up on these An. Lab. tabulations, so we're two months behind. The authors, for good and sufficient reasons (spelled "$ufficient Reason$") are always acutely interested in what you readers have to say. They have a very genuine interest—so how about sending in a post-card vote ballot this month? Just list your preferences in order—and repay the authors that please you most for their efforts. There's a 1¢ a word bonus for the first-place author, and a ½¢ a word for second place, you know!

November 1961

PLACE	STORY	AUTHOR	POINTS
1.	Sense of Obligation (Conc.),	*Harry Harrison*	1.4
2.	No Small Enemy,	*Christopher Anvil*	2.1
3.	A Problem of Communication,	*George O. Smith*	2.2
4.	Attrition,	*Jim Wanamaker*	2.7

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1.	The Helpful Hand of God,	*Tom Godwin*	2.6
2.	Black Man's Burden (Pt. 1),	*Mack Reynolds*	2.8
Tie 3.	The Foreign Hand-Tie,	*David Gordon*	2.9
Tie 3.	Sleight of Wit,	*Gordon Dickson*	2.9
4.	Remember the Alamo,	*R. R. Fehrenbach*	3.4

The Editor

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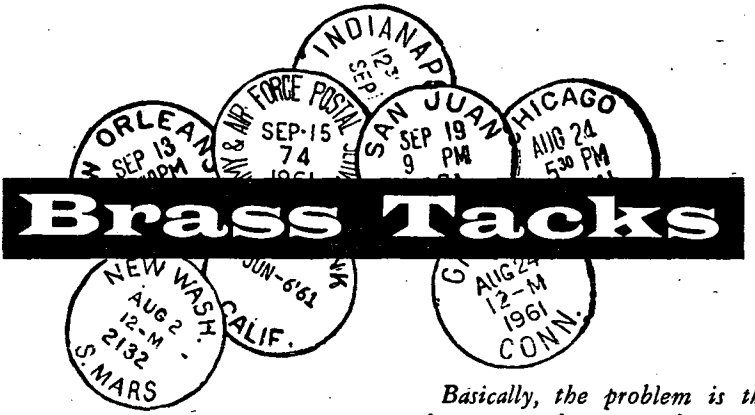

Brass Tacks

December 26, 1961

Sir:

I wish to express my delight and appreciation of your editorial in the January 1962 edition of ANALOG.

"It ain't my job . . ." openly expresses ideas and conditions which exist in most of America's larger cities. You remind me of Dr. Samuel Abelman in "The Last Angry Man", who struck out against a world of 'galoots' and 'crap artists'.

I have personally experienced the nuisance of your Thruway problem. I hope the Thruway Authority will take time to read your excellent article.—Sfc John G. Vos, Dhahran Airfield, Saudi Arabia.

I heard from both the Thruway authority and the New York State Police as result of my letter of complaint to the Thruway Authority,

I was wrong in one respect; the Thruway Authority was *aware of the problem—but were stuck with a rougher problem as a result.*

Basically, the problem is that there is no place to park your car after you've passed the gas pumps at the New York Thruway food-fuel stations. The fault lies with the original design of the stations —and that's the fault of the engineers who laid out the blueprints. The operating Authority is now stuck with it—and getting more land to extend the station areas is NOT an easy, quick solution. It's involved in n *miles of legalistic red-tape. Remember that the Authority is a State agency, and has to get permissions, authorizations, etc., etc., from Legislative channels.*

Now the quick-and-easy answer would be to make the driveway behind the restaurant two-way, so that a car could be driven back to the parking lot above the gas-pumps.

But here entereth the problem known as some-people-are-unbelievably-stupid. And on a 60-mile-an-hour Thruway, carrying heavy traffic day and night, "stupid" can, almost instantaneously, translate to "dead".

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IF the Authority allows people to get started driving in the against-traffic direction in the station driveways—deadly experience shows that some of them will proceed to drive happily out of the station, going 60 miles an hour due north in the 60-miles-an-hour-due-south lanes.

Anybody got a good, safe answer to a problem like that?

Now what Officer George didn't know— nor the station managers at several Thruway stations I checked at—was that some years ago, recognizing the problem, the Thruway Authority took down the ONE-WAY signs on those back drives! They didn't quite dare to encourage people to go the wrong-way-of-traffic . . . but they DID make it not-illegal! This, I found, the State Police were NOT aware of!

The Thruway Authority is not at fault.

The fault—the trouble—lies with the breakdown of communication that results any time a system seeks to make men act like robots.

Dear Mr. Campbell:

Good God, Man! Find some *more* contributors to "Science Fact" like Hal Clement in November 1961 issue. His "Gravity Insufficient" is a masterpiece of innoculation in Scientific Speculation! My God, what I wouldn't give to go to high school again with a science instructor like Hal Clement!

Talk about a chain reaction! Before I got halfway through his fascinating, interestingly developed, and amusingly told "story" (and believe me, I consider that last a real compliment—so few of us can tell "stories" anymore, it's a dying art; i.e., I believe one can belay frustration and think better and more clearly for longer periods when one's sense of humor is "titillated" in the proper direction, if you follow my connotation!).

I had dragged down half the astronomy and physics books on the shelf, including Glasstone's Source book on Atomic Energy, which I haven't touch for God knows how long, and even Einstein's essay on Gravitation. And after finishing Clement's journey into the Sun, I solemnly vowed to pick up the ole correspondence course in *Analog* with renewed determination and tenacity.

In fact, an "old dream" has even been started again! To and from work I pass L. A. State campus and many times I have promised myself to go back to night school and pick up physics and advanced math. By God, *this* time I believe I might *really do it!"*

If such phenomenon ever actually comes to pass, Mr. Hal Clement can just chalk up a *miracle* on his wall!

Another thing! By God I'm going to eat beans and buy me a ready-made store-boughten telescope and dump my pile of homemade junk!

Let's have Hal Clement again soon on: "The Velocity Constant," for instance, or "Time-Space Barrier" or "Macrocosmic Infinity" or What's

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Outside the Universe", or "Uv=c²". And what happened to your promise to dig up more information on this Dean Drive business???

Thank you, John Campbell, for doing a wonderful job of editing and publishing.—Phillip Harp, 14108 E. Masline, Baldwin Park, California.

Hal Clement please note! More articles as suggested would be welcome.

» » »

Dear Mr. Campbell:

You have your spies stealing a device we already have! And, what is more, in a more advanced state. The description of the LASER, in your story, buring its way through walls is a tame comparison to what it really can do. In the November 10th issue of "ELECTRONICS" (McGraw Hill) there is a rather interesting article about the LASER, one of a series. The article begins: "Colloquially known as a death ray, such military devices fall into two groups: anti-personnel and anti-machine, the last for destroying missiles, planes and tanks." Another part of the article states: ". . . at Bell Laboratories, a LASER beam was directed at a carbon block and focused with a simple lens. A spot on the target was heated to 8000 C in only 0.5 millisecond. A high power LASER built by Trident Corp., has vaporized carbon, leaving craters on a carbon plate in tens of microseconds. The LASER firing rate is four per second." Further along in the article various use of the LASER are listed, such as a side arm, anti-missile system, etc. Is this story of yours fiction or is it history?

The article, along with the two others, can be obtained from ELECTRONICS, reprint service: Reprints no: R-26a, R-26b, and R-26c, at 0.25 each. You may be interested in obtaining copies.—William M. Hilton, Box 2315, University Station, Gainesville, Florida.

They've got spies stealing our stuff before we can even get it in print!

» » »

Dear John:

One of those odd coincidences just occurred. Only another straw in the wind, but it disposes of your suggestion with the crunching finality of a 16 inch shell in the parietal. I heard this little item in a news broadcast on the same day I read your January editorial. A bill has just been introduced to reduce the literacy requirements for voting.—Joe Newby, Box 222, Jersey City, New Jersey.

"Puh-uh . . . jus' because a guy's in da home for feeble minded 's no reason he can't vote is ut? He's human ain' he? He ain' a criminal is he? So—duh—w'y shouldden he vote, huh?"

■ ■ ■

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Dear Mr. Campbell:

I have finished reading the final *installment of "Black Man's Burden"* by Mack Reynolds and found it extremely interesting. This is the understatment of the last twenty years as far as I am concerned. You will see why in a short while.

I am a Negro teacher in a Negro college. I have been reading science-fiction for thirty years, including almost all of the issues of *Astounding-Analog*. I missed a few during my uneventful career in the army. This is my second letter to the editor of a magazine. Many years ago I wrote a short note to "Thrilling Wonder Stories" in response to a question as to whether Negroes read Science fiction. The obvious answer was that at least one did. This response brought me a deluge of letters from many of my racial brothers stating that I was not alone. The letter which I wrote at that time has represented the full extent of my participation in the great debates conducted in the letters section of magazines, a great many of which have been initiated by your editorials.

First, let me say that I congratulate you for printing such a story. It is difficult to find stories that do not adhere strictly to Negro stereotypes. We are either happy-go-lucky, grinning fools or vicious, switch-blade carriers intent on rape or murder. "Black Man's Burden" did credit us with having some individuals who possess intelligence, character and initiative. This, to me, is remarkable.

Second, almost all stories concerning Negroes are overdrawn, according to the attitude of the author. This, I suppose, is a natural thing, but it seems that some previous author could have been just a little objective, if there is such a thing. We are generally portrayed as either totally good or totally evil. Happily, the story does imply that there is a middle ground, and that Negro life generally follows the pattern of other Americans. We have villians as well as heroes, but the great mass blends well into the contemporary culture of our country.

Mack Reynolds has done a fine pioneering job. The characters were diverse enough in personality and ultimate aims to destroy the implication that all of us think or act alike. Some phrases and attitudes were, to me, rather stilted, but this is to be expected in an unfamiliar setting. I will make no adverse criticism, as I am very pleased that this first effort has been published.

Incidentally, I have provided some of my sociologist friends with copies of the story. I do not know what their reactions will be, as I have never been able to fathom the baffling and devious minds of these delightful and fine companions.—Oliver T. Shannon, Chairman, Department of Mathematics and Physics, AM&N College, Pine Bluff, Arkansas.

Mack Reynolds lived in the North African areas he discusses for many years. He's writting from experience —not stereotype ideas!

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« *Continued from page 5* »
ally forbidden to interfere in a certain local *religious* matter.

About a generation later, Rome was forced to do something about that situation—but the peculiar characteristics of Political vs Religious freedom are such that while Israel could be destroyed as a political entity—as a theocratic state, it could, and did, continue to exist in every culture that allowed religious freedom. The right of a religion to destroy its violators—called "heretics" instead of "criminals"—has, in almost every human society, been acknowledged either *de jure* or *de facto*

Since Israel is in basic concept a religious power, rather than a political power, it must, necessarily, have very little religious freedom—but can have a great deal of political freedom!

Alphastan, remember, doesn't need laws, courts, or police to maintain order among its citizens—it can afford absolutely unlimited political freedom. But it can not allow *any* social freedom, and the cross-coupling between degrees of freedom in human societies is such that you can be fairly sure that Alphastan will have very narrow religious freedom.

Economic fredeom does not appear to be an independent variable; it may be, but it seems rather to be a sub-set of social freedom, heavily interactive with it. Notice that, in most religious orders, renouncing society almost automatically includes renouncing economics. A true communist system—and be it noted that Communism is something quite different from true communism—is a sort of economic anarchy, and is perfectly workable, as has been demonstrated again and again. Provided that, as in Alphastan, an extremely powerful social mechanism establishes customary behavior—and enforces it—of such a nature as to *make* it work. That is, instead of it being *illegal* for a natural-born slob to take, misuse, and destroy communal goods, it becomes *ill-mannered.* And while the genius who is a major benefactor of the community gets no larger pay, it is considered good manners to insist that he live in the most desirable quarters, have the best food, etc.

In a religious commune, a monastery, for instance, you'll usually find that the Abbot does have certain traditional privileges.

I suspect that a quite rigid mathematical analysis of cultures could be worked out along the general outline of thermodynamics—a system that recognized the multiple degrees of freedom that divide the energies of a human community.

In one respect, at least, there is a resemblance to thermodynamics. In consideration of heat energy, the total quantity of heat in a system is not an adqauate measure of the energy that can be made available in the system. A system which was all at a temperature of 2500° C. would

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contain a large amount of heat energy . . . *but no available energy.* A system at, say, an average temperature of 250° C., but with some parts at 50° and others at 500° contains much less energy—but far more energy available for doing work.

The level of a culture has nothing directly to do with the dynamism of that culture; the differentials within the culture—or within it and its effectively interacting neighbors—does measure the ability of the culture to achieve. In each degree of freedom, then, we need to look at both the level, and the range of that freedom.

A primitive Tribal system is characterized by having the Social forces absolutely dominant over all others, and having zero permissible range. It's perfectly possible to imagine a far-future culture with an intergalactic level of technology, a social system of immense intricacy, at a very high level indeed . . . but which had zero range. It would then be a system having total social entropy, at a high content level—and like any total-entropy system, there would be no energy available for achievement. In other words, it would be a perfectly static system, going on for milleniums, with no more changes than the ancient patterns of primitive tribal life showed.

Incidentally, observe very carefully that practically every one of the 10^{18} or so individuals in the culture would like it, and be personally markedly more content than people of today. Powerful social forces tend to act as an extremely effective selective-breeding system; by the time that super-tribe was established, the social forces would have narrowed the variations in human types down to such a degree that only those individuals who liked that way of life were born! Observe around you that most people today like a stable, nondynamic culture; it's easier that way. . . .

The level at which a stasis sets in makes no difference; the stasis occurs because the range of a degree of freedom has been narrowed to, or nearly to, zero.

Political freedom can, similarly, be narrowed to zero, *at any level of freedom.* The fact that a nation does, or does not, have a one-party government has practically nothing to do with the level and range of political freedom in that nation. Certainly we can imagine a nation with two well-established political parties, open, free elections on a popular democratic basis, in which nation, however, the parties are the Tweedledom and the Tweedledee parties. Two parties that think as one, two "leaders" with but a single idea.

On the other hand, imagine a nation with one, and only one political party, elections open only to a limited group of the citizens—but wide-open, all-out, hammer-and-tongs battles *within* the party to determine which definitely different philosophy of leadership shall be exercised this term. (I'm not talking about the Nazi or Russian system, however; it's necessary to make the additional stipu-

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lation that the losers in the political struggle are protected by a Social system that keeps the winners from killing off the losers. The one really critical proposition in Robert's Rules of Order for Parliamentary procedeure is that the opposition shall *always* be dealt with as "The Honorable Opposition." Once establish that, and the rest of the Rules of Order are of convenience, rather than necessity.)

The concept of a system of checks and balances always was a good one —but nobody likes it when it checks him, and balances out his idea. *Vide* Franklin D. Roosevelt impatiently trying to pack the Supreme Court.

The system of three degrees of freedom—Political, Social and Religious—represents a checks-and-balances system. In Russia, it's considered acceptable manners to eliminate permanently the losers in a political dispute—i.e., it's not forbidden by powerful Social strictures. At various times, Politics, Society and Religion each tries to overcome the "unduly hampering" activities of the other two.

Unfortunately, Society usually wins . . . and then settles down to stay that way, by eliminating its rivals. Politics and Religion are compelled to act simply as rubber-stamp systems.

Any one of the three freedoms can become absolutely dominant, achieve immunity—and absolute immunity invariably produces absolute corruption.

Under the Nazis, Politics achieved near-absolute immunity level of domination; it didn't last long enough for us to see what an Immune Freedom does when it gets rolling. Mass production disassembly line techniques for destroying people was a beginning, but doesn't really represent a well-developed Immunity system.

Religion, when it's dominant, is at least as vicious. Human sacrifice is a really ancient proposition in history, whether it be Baal, in any of his disguises, or a fertility goddess. The Aztecs seem to have estabished the all-history high in rate of mass-production sacrifices, with 20,000 men, women and children sacrificed in the dedication of one temple. (Wonder if the hard-working priests who were butchering them got overtime pay?)

And when Society gets full immunity, it out-does them all, because to such a huge extent Society determines what people *feel* is right—the emotional feeling that appears as guilt when violated, and as satisfying goodness when fulfilled. Religion and politics try to gain control of that feeling-center; Society usually manages to preempt control.

And when Society gains complete dominance, *anything* becomes not only acceptable, but a source of self-congratulatory satisfaction. The Alphastanese citizens who stone the social offender to death, and burn his wife on his funeral pyre, do so with a warm sense of good citizens doing their right and proper duty to the community.

Dean Swift's famous little "A Modest Proposal" purported to sug-

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gest solving the excess population pressure vs food shortage in Ireland at the time by selling the babies in the meat markets; thus roast baby would simultaneously attack the problem from both sides. The presentation was beautifully logical.

And it is perfectly within the abilities of Social forces to make cannibalism a fully acceptable system. It has been in the past—and social forces are just as powerful today as any other time.

And no matter how high the level of a culture—either high ethically, or high technically—it will be dynamic or static, depending on the differentials within that culture, or between that culture and an effectively contacting culture. (The Iron Curtain is an effort to reduce the effective contact between the Soviet culture and those of the rest of the world. The deadly effect of tropical diseases prevented effective contact between the African Negro cultures and the geographically close high-level Egyptian cultural area for some 6000 years of history.)

No one of the three types of freedom can reduce to zero range, at any level, if the other degrees of freedom have appreciable range. That is, a very narrow-range social system cannot exist in a culture with both religious and political freedom. No one of the three can be static, while the others have dynamic range.

But notice carefully that social status range is not equivalent to a wide differential in social freedom. What is more completely static than a slave society, in which we have very-high-status masters, and very-low-status slaves? The thing that makes this a static society is that there is one and only one acceptable social pattern over-all. Introduce into such a culture an immigrant group which holds that slavery is wrong, or one that holds that slaves should be bred not only for work, but also for food, and the range of social ideas increases—and the culture becomes dynamic. The new ideas, notice, do *not* have to be higher than the old; they need only be different.

The United States, during the 19th Century, was a uniquely dynamic culture—because the range of social ideas was immense, the range of political ideas was equally extreme, and the religious freedom range was almost equally great. Think of the number of major religious belief systems that originated in the United States in one century, as compared to the rate at which major religious systems originated elsewhere and elsewhen in history!

The resultant cultural dynamism inevitably produced an immense ecnomic growth, and a huge economic range—and a degree of technological advance per decade never before achieved anywhere-anywhen.

At the mid-century point in the 20th Century, however, the situation in the United States is vastly different. The *level* of social, political, and religious factors may be vastly higher than it was a century ago—but the *range* of those forces is reduced to a tiny fraction.

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While the citizen of the United States has a high level of political freedom—the difference between Republican and Democrat has been reduced to such a degree as to make the effect of political freedom less important. And conformity—i.e., extremely narrow range of social forces—has increased unbelievably.

Since the social norm in this country is what can best be called "a liberal arts approach", this norm produces a major restrictive effect on scientific education—the young man who decides on a career in science or technology is, in a not entirely minor degree, a social rebel. And that effect exists in fact, despite the official pronouncements of the government that we need more scientists. What counts in such things is not what the government says, but what the people they live among say—and any sociologist wanting to do a valuable thesis might make a survey of opinions held by students at the girls' colleges in the immediate area of two men's colleges—a technical school, and a liberal arts school. Opinions need have no rational correlation with facts—but in a social system, opinions enforce themselves into facts! Unmannerly behavior is unmannerly because in our opinion it is unmannerly—and for no other reason whatsoever.

And if the girls are found to hold the opinion that technical students are less interesting, less cultured, and boreing . . . for some reason the government's desire for more technical students is met by a steady drop in enrollment in technical schools.

And remember that, while the dear old bell-shaped curve of statistical distribution will continue to apply . . . the bell remains bell-shaped whether it's height-width ratio is 1 to 1 or 100 to 1—whether it's a broad, low distribution, or an excessively narrow distribution.

The essence of the question that must be evaluated in deciding whether any specific culture is a "free society" or not, then, is *not* a matter of political-legal matters alone.

It is perfcetly valid to ask the question, "Is the citizen of the United States posessed of more freedom than the citizen of the U.S.S.R.?" And as of right now, *you don't have evaluated data enough to answer that!*

The Soviet citizen definitely has greater social-range freedom than does the U.S. citizen. Russia is this century's melting pot, where a hundred different cultural enclaves have been vigorously stirred together. The rate of change of standard of living per decade in Russia indicates an extremely high effective dynamism—which is, normally, associated with a broad-range-of-freedom system.

And be it remembered that the citizen of a static culture, no matter how tight the restrictions it imposes, *feels* his culture is free. Ask a primitive tribesman whether his absolute totalitarianism ritual-tabu society is restrictive! He thinks it isn't. To him, it looks like desireable and dependable law and order.

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I repeat; you do not, as of now, have adequate evaluated data to know whether you, or Ivan, is possessed of greater net-overall freedom! Sure, Ivan's *political* system is much more restrictive—but ours is much more restrictive than the complete political freedom of the Aplhastanese!

The Soviet revolution smashed the intensely restrictive social system of Czarist Russia—and the cooperating, equally restrictive political, and religious system. They had to become atheistic, for the same reason the Romans had to smash the Jewish religion—which was completely contrary to normal Roman operations. The Jewish theocracy was, in effect, a functioning governmental system rigidly in opposition to the Roman political power. The Orthodox Church, in Russia, was completely aligned with the Czarist social and political forces; it would have been a counter-revolutionary power of destructive magnitude if the Soviets didn't turn atheistic!

The result, today, is a very weakly structured social and religious system; the highly restrictive political system may not, and from the extremely high dynamic achievement of the culture during the last 40 years it appears that it does not, offset the broad range of social and religious freedom.

Can you, in view of these factors —and in view of the abnormally high rate of progress per decade— assert with sound basis that the Soviet citizen "has no freedom"?

Freedom is not one, simple thing —and the right to vote is a quite minor portion of it.

The Editor.

IN TIMES TO COME

Next month's issue features on the cover an Alien Monster, done by Jack Schoenherr, that is, I believe, the Monster to end all Monsters. The most ferocious, vicious, overpowering reptilian creature ever created by a science-fiction artist! He's got horns, and horns-on-his-horns, and he looks like something out of a nightmare of Worsel, the Velantian. And he's really alien . . . to most of our readers. Of course, we do have some Australian readers, to whom he's not an alien, but a neighbor. His name is *Moloch horridus,* and you won't believe him! It's a beautifully exact zoological painting Science fiction? Nope . . . science-fact!

The feature story will be Darrel T. Langart's two-part novel, "Anything You Can Do" concerning an alien shipwrecked on Earth . . . but with a highly original twist. Earth *has* to produce a superman, to meet this man-eating, highly-civilized, alien of a high-technology culture, because he's too stupid to be approached, but his immense wisdom is essential to Mankind. Sound contradictory? You wait—you'll find out!

The Editor

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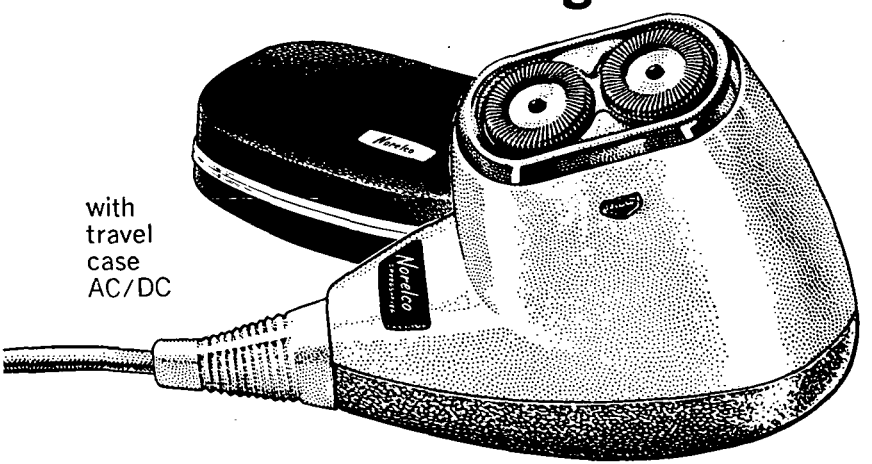

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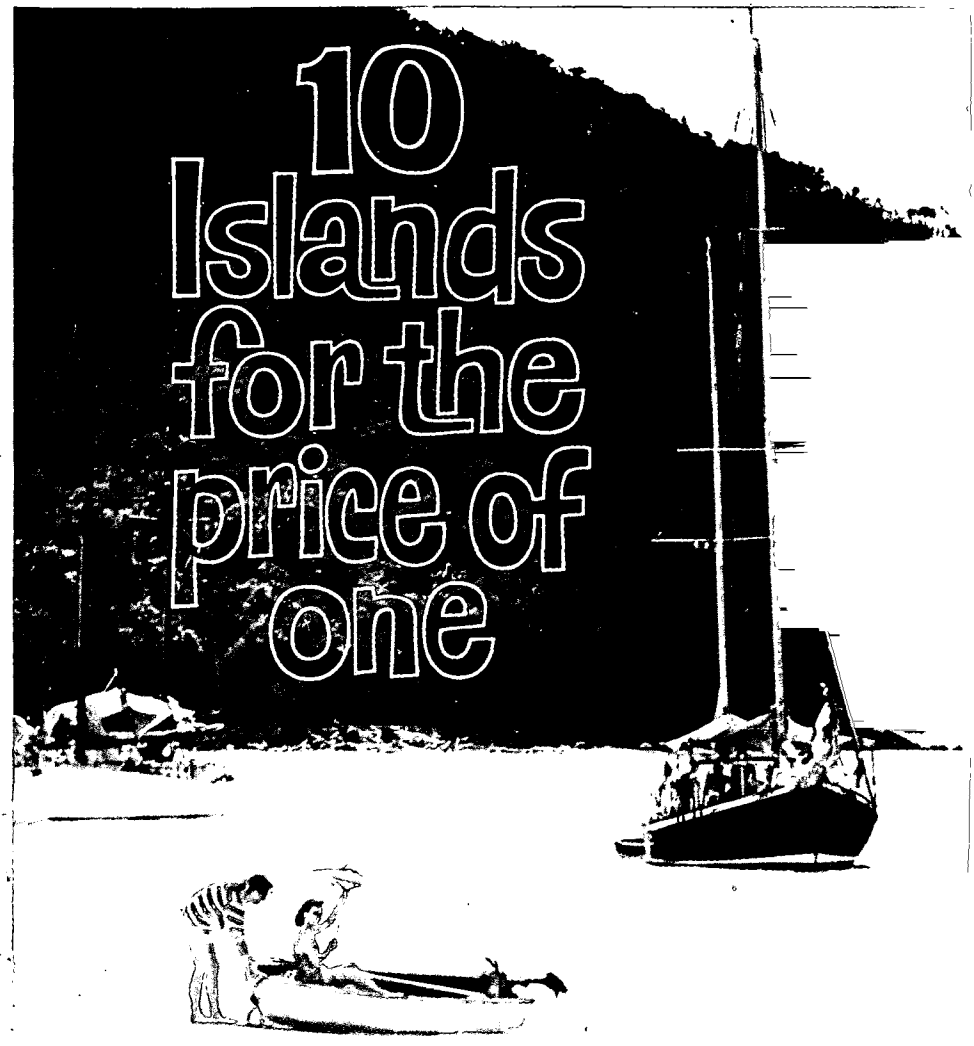

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